The RUBBER AGE

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Published Twice-a-Month by

The PALMERTON PUBLISHING CO., Inc.

(Publication Office—1-3 Peace Street, New Brunswick, N. J.)

Editorial Office: 250 West 57th Street, New York City

Entered as Second Class Matter, August 24, 1927, at the Post Office at New Brunswick, N. J., under Act of March 3, 1879.

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All Branches of Rubber Industry Report Increased Activity

Practically All Rubber Factories Show Increased Production Schedules—Akron Tire Plants Working Near Capacity—Original Equipment and Spring Dating Orders Having Their Effect—Trenton Reported Busy—Storms Force Footwear Factories to Speed Output

STIMULATED by large spring dating orders and increasing demand for original equipment tires, the tire industry appears to be getting underway for one of the best seasons it has had in recent years. Many plants are already working almost at capacity. Spring dating orders have been larger than in the past, manufacturers report. Dealer sales are heavier than is usual at this season, probably due to good winter motoring conditions throughout much of the country. The speeding up of the automobile plants has also meant a rush of original equipment orders for the larger factories. Mail order houses have their winter sales underway and are taking tires in large quantities from the manufacturers.

The speeding up of production in the tire plants has already relieved the unemployment situation in Akron. The larger factories in the district have been taking on men steadily during the last fortnight, thousands having been hired at the different factories.

Vacations Curtailed Till Mid-Summer

Goodyear's Akron plants are reported to have pushed their daily production up to 53,000 tires per day, which sets a new seasonal record for them. The company is feeling a big demand both from the mail order houses and the automobile factories, in addition to its usual large dealer organization. Employees at the Akron plants have been notified that Saturday half-holidays will frequently be cancelled in the tire departments. Those who are given vacations have received notices that production schedules will probably make it necessary to postpone all such absences until after July 1.

Other Akron factories are operating just as busily as Goodyear. Firestone is feeling the original equipment demand of Ford and other motor car manufacturers. The small tire plant, devoted almost exclusively to Ford sizes, is operating almost at capacity.

Miller is reported as feeling the quickening of sales since distribution of Miller products came under the management of L. C. Rockhill, formerly Goodyear sales manager. Goodrich also has a new sales chief, J. D. Tew, who is finding an active demand for the company's goods.

In other sections of the country similar reports of increased operations have been given mention in the daily press dispatches.

In Trenton, N. J., tire manufacturers report that orders for both tires and tubes are beginning to show an increase and the companies are looking forward to a satisfactory spring season. Plants producing mechanical rubber goods are holding their own on fairly normal schedules but orders for hard rubber goods are reported to have fallen off slightly. The Pierce-Roberts Rubber Company has been operating at nights but has recently laid off a few employees temporarily. The Joseph Stokes Rubber Company reports that its plant in Welland, Canada, is busy. The Essex Rubber Company reports business as being very satisfactory.

The feeling is widespread that tire production in 1928 will reach 70,000,000 casings. In 1927 the production was between 62,000,000 and 63,000,000. The increase would be less than 15 per cent, which is conservative. The gain in 1927 was not so great as was expected, due to the letting down of the automobile industry during the latter months of the year.

Footwear Plants Busy

Rubber footwear manufacturers in New England report that they have had to speed up production of rubber shoes of all kinds to take care of the unexpected demand from dealers following the recent snowstorms in the mid-western and Atlantic states. The open winter had previously operated against re-orders by dealers. The first days of the storm depleted many of the dealers' shelves.

The activity throughout the industry is keeping the supply houses busy also. Reclaimers and chemical houses report excellent business and they believe there is a very good chance for such conditions to continue until early summer.

RUBBER EXCHANGE TO HOLD BANQUET FEBRUARY 15th

The annual banquet of the Rubber Exchange of New York, Inc., will be held on February 15, at the Hotel Roosevelt. The full program has not been definitely decided upon, but the chief speaker of the occasion will be Congressman Lewis T. McFadden, of Pennsylvania. Neal O'Hara, the well-known humorist, is also on the program. F. R. Henderson, president of the Exchange, will preside. The committee in charge of arrangements include J. Chester Cuppia, chairman; James T. Bryan and Charles T. Wilson. An attendance of between 250 and 300 members of the crude rubber trading fraternity and their guests are expected.

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— Names in the News —

WILLIAM H. KOONS, of the Thermoid Rubber Company, Trenton, N. J., has been transferred from the company's Pacific coast office at San Francisco, Cal., to the home office and will travel in the New Jersey territory.

GENERAL C. EDWARD MURRAY, president of the Crescent Insulated Wire and Cable Company, Trenton, N. J., and Mrs. Murray have been spending some time in Quebec, Canada.

G. D. KRATZ
Recently Elected President of the Falls Tire & Rubber Co.

CLAYTON F. MUGRIDGE, until recently in charge of the mixing, mill and calendar department of the Converse Rubber Shoe Company, joined the factory staff of the Hood Rubber Company on February 1, in the engineering department. Mr. Mugridge is a graduate of Dartmouth and has been with Converse since the war.

C. F. MARSHALL, of the Seiberling Tire & Rubber Company, Akron, was recently chosen president of the Akron Association of Purchasing Agents. G. D. SULLIVAN and C. E. BROWN, both of B. F. Goodrich Company, and C. O. THORNHILL, of the Akron Standard Mold Company, were among the directors elected.

JAMES D. TEW, first vice-president of the B. F. Goodrich Company, was held up and robbed while driving to his home in Hudson, Ohio, on the night of January 20. A few days later the highwaymen were apprehended by the police and most of Mr. Tew's property was returned to him.

L. J. MCKENNEY has resigned as Detroit branch manager of the Manhattan Rubber Manufacturing Company, of Passaic, N. J., and CHRIS BOCKIUS of the Passaic office has been temporarily appointed to the post.

JOSEPH MENDELSON, is president of the newly organized Cleveland Tire Dealers' Association. Other officers include H. J. ALPERIN, secretary and L. C. GATES, treasurer.

JOHN H. DIEHL, vice-president and general salesmanager of the Mason Tire & Rubber Company, returned to the company's home office at Kent, Ohio, on January 23, after a three-weeks business trip through the south and middle west.

R. PAUL SCHREIBER, of the safety department, Goodyear Tire & Rubber Company; N. H. MYERS, of the Firestone Tire & Rubber Company, and F. L. GREENYA, of the Fisk Rubber Company, have been added to the executive committee of the Rubber Section of the National Safety Council.

JOHN W. THOMAS, vice-president of the Firestone Tire & Rubber Company, Akron, Ohio, celebrated his twentieth anniversary of unbroken connection with his organization on January 23. His first employment with the company at the age of 28, was in the chemical laboratory at a salary of less than $100 per month.

PAUL WORTH, chief engineer of the India Tire & Rubber Company, Akron, sailed for Scotland January 14. While company officials stated that Mr. Worth's visit was on company business, they would not confirm the rumor that he would have charge of the remodeling of the factory in Scotland, which the India company is reported to have acquired an interest in for the manufacture of tires.

W. D. SHILTS, secretary of the Goodyear Tire & Rubber Company, has been elected a member of the board of trustees of the Western Reserve Academy, Hudson, O. Among the other trustees of the institution is F. A. SEIBERLING, president of the Seiberling Rubber Company.

BRUCE BEDFORD, president of the Luzerne Rubber Company, Trenton, N. J., has been elected head of the Manufacturers' Council, of the Trenton Chamber of Commerce. JOHN A. LAMBERT, secretary and treasurer of the Acme Rubber Company and C. H. OAKLEY, president of the Essex Rubber Company, both of Trenton, are also members of the Council.

HORACE B. TOBIN, president of the Woven Steel Hose and Rubber Co., Trenton, N. J., and Mrs. Tobin and BRUCE BEDFORD and Mrs. Bedford have been spending some time in Quebec, Canada.

V. R. JACOBS, of the aeronautical department of the Goodyear Tire & Rubber Company, addressed the Rotary Club of Columbus, Ohio, recently on the subject of "Rigid Aircraft." Mr. Jacobs, who was a naval officer during the World War, has made a special study of "lighter-than-air" ships, particularly the Zeppelin type.

John J. Chandler

John J. Chandler, vice-president of The Hoggson & Pettis Manufacturing Company, New Haven, Conn., and a member of the Rubber Association of America, died at his home in New Haven on December 18.

Mr. Chandler was born in November, 1865, in New Haven, where he received his education and early training.

He entered the employ of his company in 1881 as an apprentice and rose steadily as

J. J. Chandler

the organization enlarged, serving successively as foreman, superintendent and traveling representative until his election as an officer of the company in 1906. His business brought him into close contact with the rubber trade with which he enjoyed a wide acquaintance and popularity.

H. M. Lambert

H. M. Lambert, founder and former president of the Lambert Tire and Rubber Company, Akron, O., died suddenly of heart disease at the Akron City Club on February 4. He had come to Akron from his home at Portland, Ore., a few days previously in connection with the business of his old company and was apparently in good health up to within a few hours of his death. The fatal attack came shortly after an early morning walk with his old friend and business associate, J. W. Coyle, vice-president and chairman of the Lambert company's board, and he passed away shortly before noon.

Mr. Lambert was of an inventive turn of mind and the Lambert Tire and Rubber Company was organized as a result of his invention of a special tire. The company while organized in Portland, Ore., began operation in Akron in 1918. Mr. Lambert continued as president until May, 1927, when George and Penfield Seiberling together with J. W. Coyle took over the active control of the company's affairs.

Additional News Items Will Be Found in a Section Starting on Page 488

The Composition and Properties of PLASTICS

Casein, Pyroxylin and Synthetic Resin Plastics Come Into Competition With Hard Rubber—Each Has Its Advantages, Based on Special Properties Which It Possesses—Lack Elasticity

PLASTICS hold a secure place in the list of important manufactured products. The name indicates that these products can be molded, that is, shaped and formed into articles of various sorts and uses. The plastic masses are of varied character and while some can be molded in the cold and are set by heating, others are molded when hot and set on cooling. The properties of the plastic masses and of the products that are derived from them depend largely on the composition, that is, on the ingredients that they contain.

The composition of plastic masses varies greatly. All sorts of materials are found in them. Many fillers, which act merely as ballast and are added for the sole purpose of giving weight and body to the mass, are mixed with the binder, which is the real plastic. The binder can itself be of various sorts, and if we adopt the wider definition of plastics and consider it to include the artificial stones as well, this binder can be inorganic in origin as well as organic. Thus in the case of the inorganic, the binder is lime which is converted into carbonate of lime and which thus binds together the sand, etc., in a firm union, forming an artificial stone. Water glass, which is sodium silicate, has also been used as a binder in making plastic masses.

Organic and Inorganic Binders

The organic binders are numerous, perhaps more so than the inorganic binders. Such substances as glue, gelatin, albumens, cellulose derivatives, such as cellulose acetate and nitrocellulose (the pyroxylin plastics), synthetic resins of various types, casein, starches, natural resins, etc., can be used. There are many organic binders and the results obtained with them vary considerably in accordance with their character.

The rubber industry is also a plastic industry in that it deals with a material which is moldable when heated and becomes hard when set. Rubber is itself used as a binder in the manufacture of plastics, in which case the percentage of rubber will be very small in comparison with the proportions of other ingredients. The rubber industry proper is however essentially concerned with the manufacture of merchandise which contain large proportions of the rubber gum or binder.

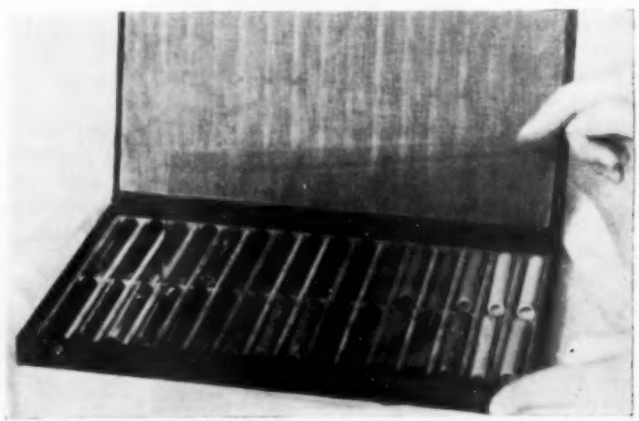
It is readily understandable that there should be contact between the plastic industry and the rubber industry, that there should be competition between their products in certain directions. It must not be thought that the plastics can be employed in the place of rubber in its major uses, for rubber is the only substance that can be properly used for these purposes. But there is unquestionable competition between the minor uses of rubber and these plastics, particularly in the case of hard rubber.

It is manifestly impossible to discuss all the plastics even in the most cursory manner in this short article, but certain classes of them are of such outstanding importance that our space must be limited to them. These plastics are primarily the pyroxylins, in which cellulose derivatives are employed, the synthetic resins and the caseins.

Casein is a albumen which forms the principal ingredient of cheese. Cheese is known to be made by the coagulation, the curdling of milk by means of enzymes, such as rennet. The commercial casein is made from skimmed milk and is also precipitated by the action of rennet. The casein obtained in this manner has a light yellow color, much like amber. The casein is ground in suitable mills and worked up into a fine powder. Casein is soluble in alkalies and its usefulness depends largely on this tact. It can be formed into articles which are then hardened by treatment with formaldehyde and other chemicals.

Casein is a true plastic and hence more than a simple binder. It is like rubber in this respect. In other words, articles can be made from casein alone or in admixture with small amounts of coloring matter. On the other hand casein can also be used as a binder and mixed with large amounts of such fillers as paper pulp, sawdust, cork waste as well as mineral matter such as gypsum, talc, etc.

A great many different articles of personal, domestic and industrial use have been manufactured from casein. The case in plastics are odorless and colorless. Hence then can be colored as desired in the greatest variety of shades, are non-inflammable and possess excellent electric properties. Articles of jewelry, novelties, toilet articles, handles and many others are made from casein. Casein plastics have also entered the industrial field and have been used to make various electrical and mechanical parts, such as tool handles, cover plates and the like. They have competed with hard rubber and have been used as a substitute for it. There is no doubt that they possess certain advantageous properties and under certain conditions not the least of these may be the price. They are easy to machine but are rather difficult to mold, more so than rubber or



These Tubes and Transparent Sheet Are Samples of Inda, a Casein Plastic

most other plastics. The casein plastics are resistant to oil, alcohol, benzene, and dilute acids, but they are attacked by strong acids. They will absorb water when placed in water or in a moist atmosphere.

However, hard rubber has advantages over the casein plastics in that it is stronger, will wear longer and will resist chemicals better. It is much more easily worked than the casein plastics.

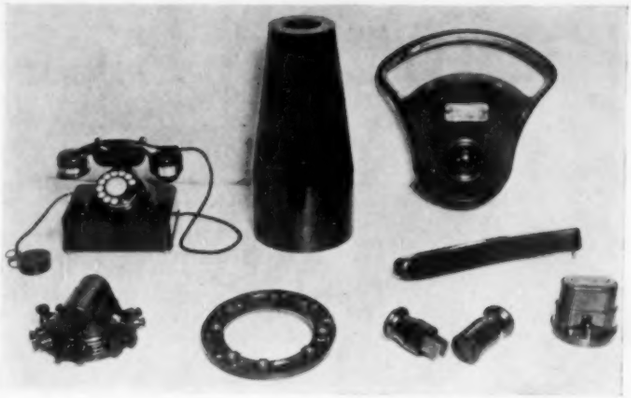
Another very important class of plastics is the pyroxylins. The pyroxylin plastics have as their base a cellulose derivative, either cellulose acetate or cellulose nitrate or nitro-cellulose, as it is more commonly called. It must not be assumed that these two are the only possible derivatives of cellulose, for there are other cellulose esters, or ethers as they are called, but these are yet of no commercial importance. Celluloid is perhaps the best known of these plastics. It is unnecessary to mention that a great many different articles, used in every-day life, are made from celluloid and the rest of the pyroxylins. Novelties, toilet articles, balls, toys, buttons, photographic films and knife handles are but a few of the pyroxylin products.

But the use of the pyroxylins in making electrical and mechanical equipment is limited. In the first place, the pyroxylins are inflammable, and while cellulose acetate is

This Pyralin Set by duPont Is A Good Illustration of the Use of Pyroxylin Plastic

supposedly a non-inflammable substance, nevertheless this contention is purely relative only. Then again, the celluloids and acetate plastics are much too soft to find use in making machine parts and the like. There is no competition between these products and hard rubber that is worth while mentioning.

Perhaps the most important of all the plastics and certainly one of the most interesting and one on which the most work has been done in recent years is the synthetic resins. While the first synthetic resins were made from phenol and these resins are largely used at the present time, nevertheless it must not be thought that these are the only resins that are made synthetically. Cresol and other phenols may be used as the starting point, as well as various aldehydes and also urea. This latter substance has attracted considerable attention recently due to the fact that a product was made from it, a synthetic resin to be sure, which seemed to possess most of the good properties of glass and none of the bad ones. The manufacture of synthetic resins is very complicated and many processes are used, depending a good deal on the nature of the starting



Bakelite Is One of the Best-Known Synthetic Resins. It Is Used In Hundreds of Parts, Such As These

substance and the reagents employed. The properties of the condensation products, as they are called, vary widely in consistency, in workability, in applicability, etc.

The phenolic resins and the other members of this group of plastics are products of considerable technical and commercial importance. They are used, just like the other plastics, for making various articles of every day use, such as umbrella handles, toilet articles, beads, buttons, etc., but in addition they have very important electrical and mechanical application as well. In fact these products may be considered as the most serious contenders for business in competition with hard rubber.

Phenolic resins are used in making all sorts of mechanical and electric parts, in the new radio industry as well as in the older industries. Motor parts, radio panels, gears, dials, tool handles, steering wheels, meter covers, clock cases, switch boxes, etc., are made from these resins. Their electrical properties differ as do their mechanical properties, depending on the raw materials and reagents used in their manufacture and on the conditions of manufacture as well, but their dielectric characteristics are generally very marked and for this reason they are preferred often in making certain kinds of electrical equipment. The resins are easily molded. Some of them will harden when heated instead of softening, as might be expected, and all of them are generally unaffected by oils and almost impervious to water. The hardness and the tensile strength of these resins are notable properties.

Nevertheless none of the synthetic resins possesses the elasticity of hard rubber. While it may be true that this may be an advantage to the resins in some ways, nevertheless it is a marked disadvantage in other ways, and it is for this reason that hard rubber is preferable for many purposes. Nevertheless, it is true that the synthetic resins are employed for a large number of purposes and give good results when used under the proper conditions.

It should be mentioned that the synthetic resins can be colored in any desirable shades by the addition of suitable pigments or dyestuffs. Various fillers are employed along with the resins to make compositions which can be molded under the influence of heat. It is possible to mold the resins and compositions containing them to finished size and this is a highly important fact for the reason that the synthetic resin plastics do not machine well.

It is interesting to note that the tensile strength of the phenolic resins is about 3,500 to 7,000 pounds per square inch, which is about that of hard rubber. The synthetic resins will resist temperatures better than hard rubber and this is a very important property. Thus resins of this character will resist a temperature as high as 300 degrees F. while rubber will not stand up against a temperature of 150 degrees F.

Pigment Reënforcement of Reclaimed Rubber

The Accompanying Paper Records the Effects of Different Types of Compounding Materials on Reclaimed Rubber.

By H. A. WINKLEMANN and E. G. CROAKMAN
The Philadelphia Rubber Works Co., Akron, Ohio

COMPOUNDING ingredients of many types are in use in rubber compounds and, although their effort on rubber has been extensively investigated, there has been very little work published to show their effect on reclaim alone. The behavior of reclaimed rubber in compounds which also contain crude rubber, accelerators, and pigments is well known. The presence of these variables makes it impossible to determine the effect of the pigment on the reclaim itself. In this study we propose to show (1) the effect of varying volume loadings of different pigments on a whole-tire reclaim cured with sulfur, (2) the effect of accelerators and activators, and (3) the effect of curing at lower temperatures. With crude rubber the desired physical properties may often be obtained by cure or by the combined effect of cure and the reenforcing action of compounding ingredients. Owing to the degree of disaggregation of the reclaimed rubber the effect of cure is greatly decreased and the action of reenforcing pigments is necessary to bring out the maximum physical properties of the reclaim. The soluble and insoluble phases of reclaimed rubber differ in chemical and physical properties, indicating varying degrees of disaggregation of the rubber hydrocarbon.

Reclaimed rubber affords a very good medium for the dispersion of pigments. Dispersions of pigments in a reclaim may serve a dual function in improving both the physical properties and the working conditions. A pigment, to function as a reenforcing agent, must absorb the rubber, resulting in a "drying up" effect of the more highly disaggregated portion of the reclaim. A pigment must reenforce every portion of the reclaimed rubber hydrocarbon before it can be classed as a reenforcing pigment.

Effect of Different Pigments

The reenforcing action of pigments such as whiting, barytes, blanc fixe, clay, catalpo, zinc oxide, kadox, thermatomic carbon, and carbon black has been studied in a whole-tire reclaim. For purposes of comparison a standard grade of mineral rubber was also used. The whole-tire reclaim used had a rubber value of 57 per cent. The same lot of reclaimed rubber was used throughout. Varying volumes of each pigment—viz., 2.5, 5, 10, 15, and 20—were added to 100 volumes of the reclaim and cured with 5 parts of sulfur. This volume-loading range insures both a minimum and a maximum loading effect. Each compound was cured for lengths of time varying from 15 to 55 minutes at 287° F. (141.7° C.). The reenforcing action of each pigment on the reclaim and the rubber hydrocarbon in the reclaim was thus observed without the presence of other factors.

Stress-strain, tensile strength, elongation, permanent set, resistance to tear, resistance to abrasion, and plasticity measurements have been made in order to correlate the effect of these pigments on each of the above factors. The abrasion tests were made on the New Jersey Zinc Company's abrasion machine.

Two methods of mixing were used to insure the best dispersion possible and to serve as a check throughout the work. In one series of experiments the pigments were added to the unfinished reclaim and then refined; the sulfur was then added. In the second series the pigments and sulfur were added to the finished reclaim on the mixing mill. Owing to the close agreement of the results obtained by the two methods only the experiments in which the pigments were refined into the reclaim will be reported. Refining versus mixing did not show marked differences in physical properties of the 5- to 10-pound batches which were used. In general, when the pigment was refined into the reclaim a higher elongation was obtained, although the tensile strength was not always increased. The refining of pigments and reclaim in factory practice gives better dispersion due to breaking up of pigment agglomerates. The results are improved physical properties and a smoother reclaim, depending upon the pigment used.

A study of the physical properties of the compounds containing various pigments shows that carbon black is the only pigment that has a marked reenforcing effect with increasing volume of pigment. Twenty volumes of carbon black still show an improvement in the physical properties. Thermatomic carbon, clays, and zinc oxides show some effect, whereas the other pigments show scarcely any. Large amounts of whiting, barytes, and blanc fixe can be compounded into a reclaim without appreciably affecting the stress-strain curve or showing a serious overloading effect.

Tests With Various Materials

MINERAL RUBBER—A comparison of the stress-strain curves of varying volumes of mineral rubber shows that this material has no reenforcing value. (Figure 1) The cures become softer as the amount of mineral rubber is increased. The tensile strength decreases but slightly with increasing volumes of pigment. (Figure 2) The modulus at 200 per cent elongation, however, is almost identical with that of the reclaim alone. Mineral rubber increases the resistance both to tear and to abrasion. (Figure 3) The slight increase in the resistance to abrasion as the amount of mineral rubber is increased may be due to the fact that the true abrasion loss is not obtained because the stock becomes soft.

WHITING—The stress-strain curves of varying volumes of whiting show that it is almost inert as a reenforcing pigment. (Figure 4) There is only a slight stiffening shown in the lower part of the stress-strain curve. The tensile strength decreases with increasing volumes of whiting. (Figure 2) The elongations at break and modulus at 200 per cent elongation are identical with the blank. The resistance to tear (Figure 3) is increased slightly with 10 volumes of whiting, while the resistance to abrasion increases up to 10 volumes and then remains constant.

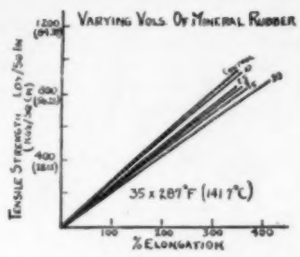
BARYTES—This pigment shows no reenforcing effect with increasing volumes of pigment. (Figure 5) Even with 20 volumes no stiffening is indicated and lower tensiles are obtained in each case. Barytes results in a gradual decrease in the tensile properties with increased volume loading while the modulus at 200 per cent remains almost constant. (Figure 6) A slight lowering of the elongations occurs. The resistance to tear (Figure 7) is not affected, although the resistance to abrasion is improved with each addition of pigment.

BLANC FIXE—A maximum reenforcing effect is shown with 20 volumes. (Figure 8) Its effect is very slight, however, and shows but very little improvement over the reclaim alone. Increased volume loading gives higher tensiles to 5 volumes, after which there is a decrease due to overloading. (Figure 6) A slight decrease in the elongations is also obtained. Better resistance to tear and abrasion (Figure 7) are obtained than with the reclaim alone.

CATALPO—There is a reenforcing effect without any stiffening action. (Figure 9) Higher elongations are obtained with Catalpo than with the reclaim itself, showing that a further plasticizing effect may have taken place as a result of the working in of the pigment. Both the resistance to tear and to abrasion is superior to that obtained with the reclaim. A higher permanent set is observed over the full range of cures. Increased volume loading (Figure 10) gives a slight increase in tensile up to 10 volumes, after which it decreases again, while the elongation remains almost constant. Practically no effect is produced on the modulus at 200 per cent elongation. The resistance to tear (Figure 11) is only slightly increased, although the resistance to abrasion is appreciably improved with each additional amount of pigment.

CLAY—A stiffening as well as a reenforcing action is shown.

This paper was read before the Rubber Division of the American Chemical Society at its meeting in Detroit, September 5 to 10, 1927, where it was received as an important part of the Division's reclaimed rubber symposium. It is reprinted by courtesy of *Industrial and Engineering Chemistry*.



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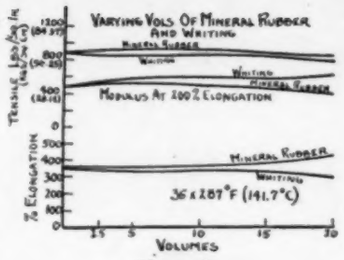

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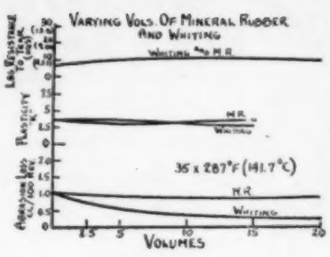

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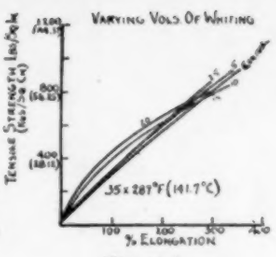

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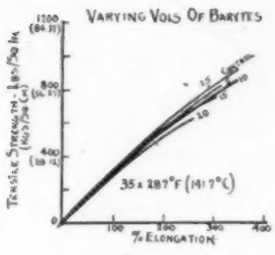

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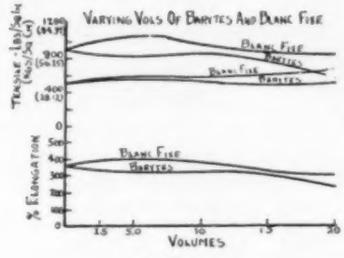

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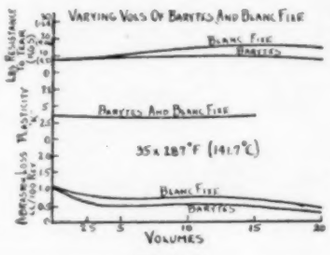

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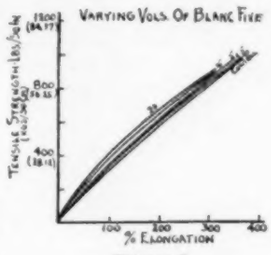

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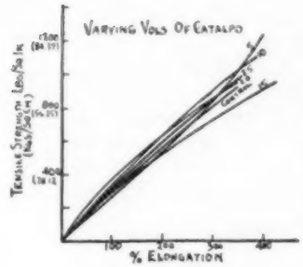

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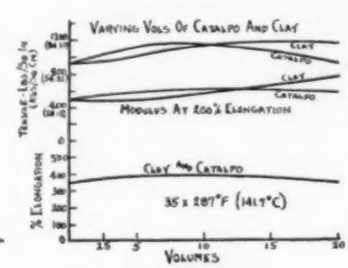

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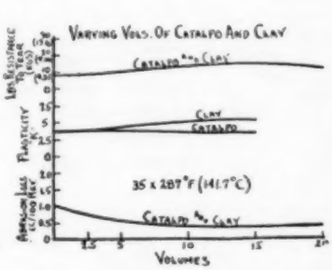

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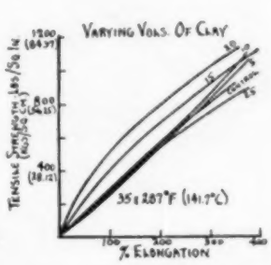


Figure 12

(Figure 12) The stress-strain curve with 2.5 volumes is lower than the reclaim alone, but as the amount of pigment is increased a decided stiffening effect is obtained, reaching a maximum of 20 volumes. The tensile strength (Figure 10) improves as the amount of pigment is increased, while the elongations remain almost constant. The modulus increase with each addition of pigment. The resistance to tear (Figure 11) and abrasion are increased slightly with increased volume loading.

ZINC OXIDE—Zinc oxide has a reenforcing effect and, although the degree of stiffening increases with each addition of pigment, this effect is not very marked. (Figure 13) The tensile strength (Figure 14) and modulus at 200 per cent increase slightly with each addition of pigment. The elongation, however, remains practically constant even up to 20 volumes. The resistance to tear and abrasion increase slightly. (Figure 15)

KADOX—There is a decided reenforcing effect and in every instance the ultimate breaks are higher than those obtained with the reclaim alone. (Figure 16) Increased volume loading has little effect on the tensile strength (Figure 14) beyond 5 volumes, although there is an appreciable increase up to this point. The modulus at 200 per cent remains almost constant up to 20 volumes. Very little effect on the elongations is observed. The resistance to tear (Figure 15) and abrasion increases with each addition of Kadox and, in every case, is better than that obtained with the reclaim.

THERMATOMIC CARBON—The stress-strain curves with varying volumes of Thermatomic Carbon show decided reenforcing effect in reclaimed rubber. (Figure 17) The degree of stiffening is proportional to the amount of pigment added. Increased volume loading (Figure 18) gives only a slight improvement in tensile strength and the effect on the elongation is almost negligible. The modulus at 200 per cent elongation and the resistance to tear (Figure 19) and abrasion increase with each addition of pigment.

CARBON BLACK—This material gives higher physical properties in every instance than the reclaim alone or any of the other compounding ingredients. (Figure 20) The reenforcing effect increases in proportion to the amount added. The tensile strength (Figure 18) increases with each addition of carbon black. With none of the other pigments does the modulus at 200 per cent elongation show such a marked increase with each addition of pigment. The resistances to tear (Figure 19) and abrasion are very much higher than those obtained with any other pigment.

TABLE I—PLASTICITY MEASUREMENTS

Added Pigment	5 Volumes		15 Volumes	
	N value	Plasticity *K*	N value	Plasticity *K*
Mineral rubber	0.746	2.72	0.643	3.06
Whiting	0.521	3.91	0.569	3.84
Blanc fixe	0.747	3.69	0.569	3.84
Barytes	0.711	3.32	0.637	3.66
Clay	0.581	4.18	0.863	5.63
Catalpo	0.813	4.21	0.721	4.13
Zinc oxide	0.659	3.55	0.829	4.60
Kadox	0.668	3.32	0.531	4.76
Thermatomic carbon	0.963	3.38	0.718	3.53
Carbon black	0.663	4.09	0.527	6.36
	N value		Plasticity *K*	
Reclaim (no pigment)	0.680		3.53	

PLASTICITY—Plasticity measurements were made on the Williams plastometer on the sample of reclaimed rubber and on the reclaim containing 5 to 15 volumes of the various pigments. (Table I) In preparing the sample for test the reclaim is warmed by several passes through a cold mill with a setting of 3/16 inch (5mm.). The warmed stock is calendered as thinly as possible and is plied up to a thickness of about 14 mm. The plies are firmly pressed together to exclude air. A pellet having a volume of 2 cc. is used for each determination.

The mixtures containing mineral rubber have higher plasticity than the reclaim itself. Five volumes of barytes and thermatomic carbon give higher plasticity than the reclaim itself, but with 15 volumes the results are practically the same as with the reclaim alone. Five volumes of whiting, catalpo, and zinc oxide decrease the plasticity of the reclaim, although the addition of 15 volumes causes no further decrease. Clay, Kadox, and carbon black show a marked decrease in plasticity with increased volume loading.

The plastometer measures the resistance to flow at a given temperature and load. It does not measure the nerve or working properties of a rubber compound. It is possible for a rubber compound to show a high plasticity and yet have poor working properties due to nerviness.

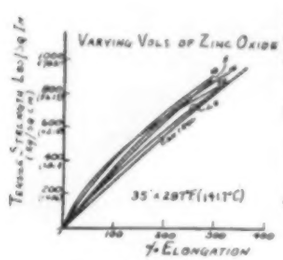
METHODS OF MIXING—A comparison of the two methods of mixing which were used is illustrated in Figures 21, 22, and 23 for

Kadox and carbon black. The tensile and elongation in each case check well within experimental error.

The effect of accelerators and an activator such as zinc oxide on the physical properties of a whole-tire reclaim containing varying volumes of whiting, clay, Kadox, and carbon black was determined. Diphenylguanidine and Safex were used as accelerators and the compounds were cured at 287° F. (142° C.) and 267° F. (131° C.), respectively. We therefore have the effect of reenforcing pigments with accelerators at both a high and moderately low temperature.

The physical properties of the reclaim containing varying volumes of Kadox with diphenylguanidine as the accelerator are the

(*Continued on Page* 478)



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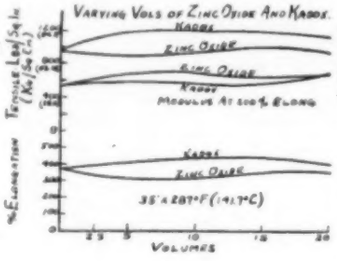

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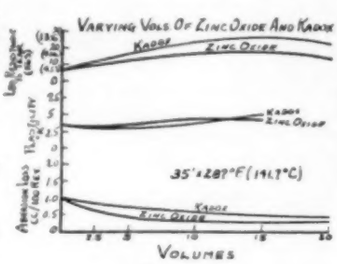

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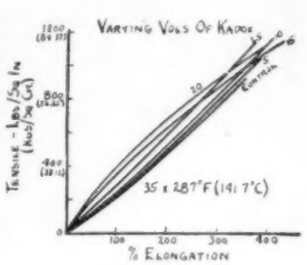

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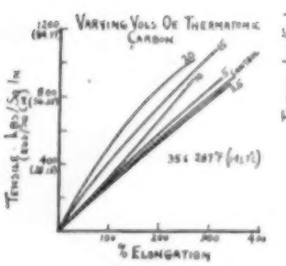

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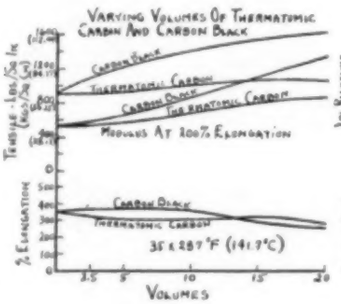

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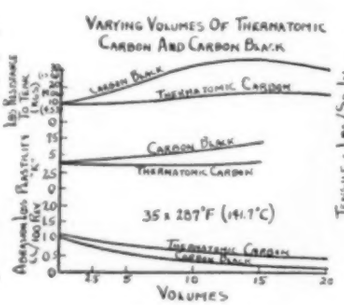

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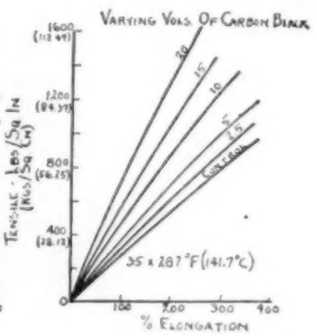

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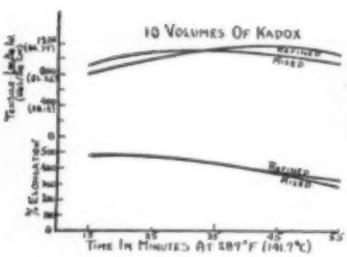

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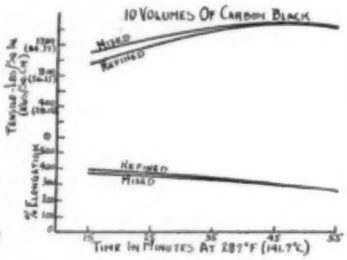

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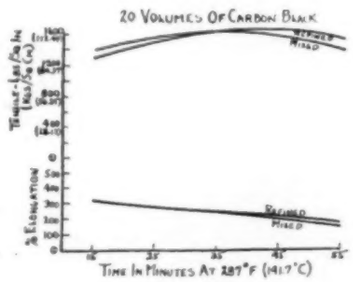

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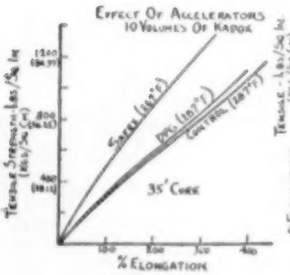

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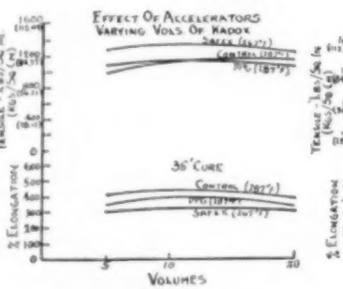

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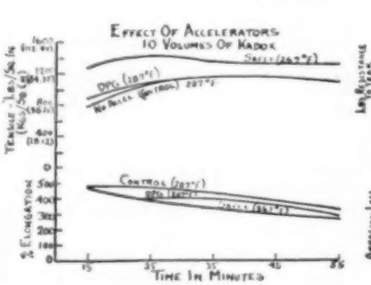

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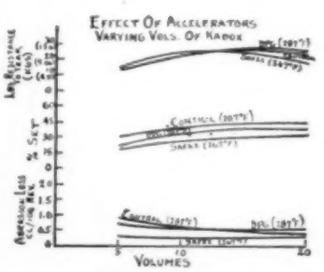

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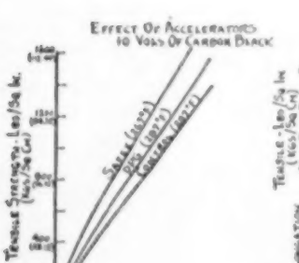

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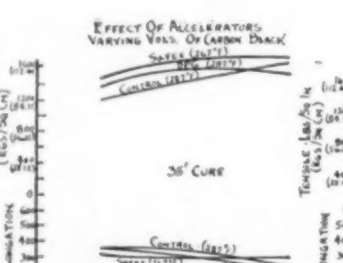

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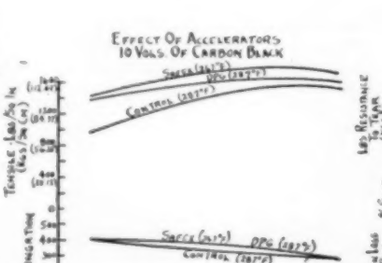

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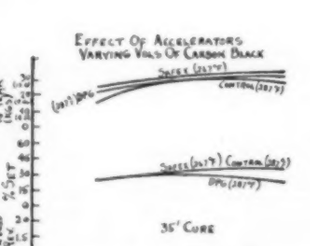


Figure 31

The Value of INTER-PLANT VISITS

The Policy of Visiting Plants of Competitors Has Accomplished Much Good in the Rubber Industry

THE rubber executives of prior generations would look with horror upon the present day practice of visiting plants of competitors and permitting them in turn to invade the four walls of their factories. Yet plant visitations are now an old story in the industry, and comparisons of processes, labor conditions, waste percentages, and even compounds are being made with systematic regularity.

There is no question that this change in policy has done a lot of good in the industry. All cards are laid on the table and the old air of suspicion and distrust has vanished. Just as organized scouting in intercollegiate football has been found to be more satisfactory than agreements to the contrary, so the rubber industry has found that everyone is the gainer by these friendly interplant visits.

The Closed-Door Policy

It must not be assumed that rubber executives a few years back were uninterested in what their competitors were doing. On the contrary they spent more time thinking about it because sources of information were so meagre and uncertain. Such sources as were available savored of the back-door variety. Former employees of some competitor would pass the word along about some process or some method which he had seen, but such reports were usually garbled in the telling, and experienced superintendents learned to pay little attention to them.

In fact, experience has long ago taught the schooled rubber man that the fact that one plant does a certain thing one way and his competitor another, does not indicate that there is a "one best way" for all concerned. Plant conditions have a lot to do with determining methods. One factory may have more space than another, a different class of labor, different power conditions, or a dozen other reasons why his competitor's methods will not work for him. Then again, a process may be observed in a competitor's plant which he is about to discard because it has proved unsatisfactory. Under the old system a plant superintendent might hear of it, and adopt it on the strength of the mere fact that his competitor was using it, only to find that it would not work for him either.

Even under the most open conditions, the plant visit made with no definite object in view is apt to prove wearisome and a waste of time. The trouble is that in going through a competitor's plant the average man sees too much. He gets a kaleidoscopic view of the plant and retains little more than a general impression.

Many of the large rubber companies, who, strange to say, do more plant visiting than the smaller ones, have realized this by experience and have laid down a definite policy on plant visits. When an executive returns from a trip through a competitor's plant, he is required to make a detailed report of what he has seen, to make comparisons, and in conclusion to outline any suggestions for improvements he has to make. These are carefully indexed and filed, and as the suggestions are acted upon, a report of that action is filed also. In this way, when an executive desires to make a plant visit about a certain subject, he is first obliged to consult the file, and in many cases the information he seeks is available there so that the trip is unnecessary and much time is saved. If the information is not recent, he learns what has been found out in the past and has a definite background against which to proceed.

Why make the plant visit? It is apparent that the direct benefit of borrowing ideas and processes wholesale is practically nil. But the wise company official encourages these intervisitations because he knows that they are the best builders of executive morale known. We all see too much of our own four walls. We are apt to lose our perspective. What happens? Superintendent A is in a rut; he is "fed up" on his troubles—production, quality, labor costs, and so on. He visits the plant of Superintendent B. Inevitably he comes back with this outwardly expressed thought "You know we thought we were pretty rotten on this or that. But you know over at B's plant he is only doing so and so. I guess we're not so rotten after all!" Yet inwardly he has made mental note of many things where Superintendent B has him beaten by a city block. And quietly he goes about correcting those troubles. He gets a new slant on many things. The psychological effect is stimulating, and therein lies the real value of plant visits.

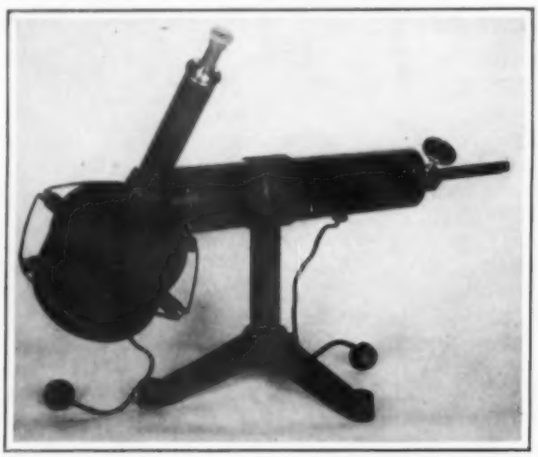
Further Co-operation Desirable

But it must not be inferred that the millenium in rubber has arrived. Not all plants have unlocked the doors as yet. And there is room for more co-operation with respect to merchandising methods and practices than there has been in the past. But we are entering on a period in the industry which has much in store for all, and there is no question that this opening of the doors to each other's plants has done much to enhance the growth and prosperity of the industry. It ultimately contributes to lower costs for all and that means wider markets and a bigger industry.

A Carbon Black Color Tester

ON THE theory that variation in color is closely related to the properties which carbon black shows when used as a reinforcing agent in rubber, Godfrey L. Cabot, Inc., carbon black manufacturers of Boston, have developed a color testing instrument known as the Nigrometer. Professor Arthur C. Hardy of the physics department of Massachusetts Institute of Technology colloraborated with the Cabot laboratory in the work.

The Nigrometer, which is an adaptation of the principle



The Nigrometer for Carbon Black Testing

of the intensimeter in optics, aids in detecting differences in color of samples of carbon black when such differences cannot be distinguished by the unaided human eye. It measures comparatively the amount of light reflected from black surfaces, such as carbon black rubbed in oil. The instrument is expected by the Cabot organization to be useful in culling carbon black at the plant but is not thought to be practical for use by the individual rubber manufacturer.

Ebon—New Carbon Black Stock

TO MEET present day needs of tire manufacturers in assisting tires to resist excessive tread wear, the U. S. Rubber Reclaiming Company, New York City, have just announced a new black stock called "Ebon." This stock is the result of many experiments to develop a combination of high grade reclaim and carbon black for use in tread stock so as to help prevent rapid wear.

Due to high speed, four-wheel brakes, quick get-aways and concrete roads, tires are called on to do more work than ever before. To meet this condition Ebon was developed. The outstanding feature of this stock is the uniform incorporation of intimately dispersed carbon black, made possible by a newly developed process. In addition to giving added resistance to abrasion, Ebon is said to produce a jet black, tough, resilent and long wearing tread.

Oxynone—New Anti-Oxidant and Accelerator

THE Rubber Service Laboratories Company, of Akron, has announced the introduction of a new amine product called "Oxynone." It is a definite crystalline chemical compound, developed in the company's own research laboratories and is both an anti-oxidant and an accelerator.

Its accelerating power is quite mild in pure gum stocks but is more powerful in tread stocks as it is not affected by carbon black. As an accelerator it requires full curing temperatures similar to the di-substituted guanidines or Hexa. In a quality tread its accelerating power is claimed to be equal to DOTG and in mechanical goods it is said to be better than DPG. It is also claimed that its range of cure is long and the modulus of stocks containing it increases on prolonged cure and on aging. Numerous oxygen bomb tests show less falling off in tensile of the stock on aging when using Oxynone than in cases where some other material is used.

Exclusive Rights to Tensol

Exclusivé rights for the use in the rubber industry of "Tensol," a solvent recently introduced by the Chemical and Dye Corporation of Newark, N. J., have been taken by one of the principal American rubber manufacturers, according to a statement of the corporation. "Tensol" is said to be a valuable time saver in many industries, as it "accomplishes a mixture of solids and liquids instantaneously." The solvent is used in the separation of materials, such as rubber from fabric. The name of the rubber manufacturer given exclusive rights to the material was not announced.

Selling Rubber Goods By House-to-House Calls

The sale of household rubber goods by agents who travel from house to house throughout the country is being actively tried out by an Akron company. Instead of carrying Fuller brushes or Realsilk hosiery or any other well-known line sold by agents, the representative carries samples of 47 useful rubber articles. It is claimed that on account of the attractiveness of the goods and the diversity of the line, sales are made at almost every house visited. Rubber household necessities and specialties of every sort are included, ranging from window washing outfits to bathing caps.

The Good Roads Movement

The United States, with 80 per cent of the world's automobiles, properly has more good roads than any other nation. Yet it has only started on the business of building good roads. Recent figures show that only 76,000 miles of high type pavement have been laid, of which 50,000 miles are concrete. This is a negligible amount when the nation's total highway mileage of 3,000,000 miles is considered.

Pigment Reinforcement of Reclaimed Rubber

(*Continued from page* 476)

same as those obtained when no accelerator is used, with the exception of 20 volumes of Kadox which shows a slightly higher stress-strain curve. (Figures 24 and 25) Safex at 131° C. does not affect the rate of cure but increases the tensile strength (Figure 26) and resistance to abrasion. (Figure 27) Safex gives a very much higher stress-strain curve, accompanied by a lower elongation. It has no effect on the resistance to tear.

Diphenylguanidine and Safex increase the rate of cure and improve the tensile strength of a whole-tire reclaim containing yarying volumes of carbon black. (Figures 29 and 30) The resistance to tear (Figure 31) is slightly improved, whereas the accelerators give a higher stress-strain curve with 10 volumes of carbon black (Figure 28), but with 20 volumes Safex does not give any higher stress-strain curve than when no accelerator is used. This is probably due to the degree of cure obtained at the lower temperature.

Safex in a whole-tire reclaim containing varying volumes of clay or whiting gives improved tensile strength, resistance to tear and abrasion, and a higher modulus. The rate of cure is increased. Diphenylguanidine has very little effect other then increasing the rate of cure.

Effect of Low-Temperature Curing

It is logical to ask what benefits may be expected from low-temperature curing of a reclaim which in the course of its manufacture has been subjected to temperatures ranging from 350° to 385° F. (177° to 196° C.). The results of this study show that there is a distinct benefit to be derived by curing at lower temperatures.

G. F. Weeks and Native Servant in the Sierra Madre during Rubber Explorations. From a Wash Drawing by a Latin-American Artist.

Exploring for RUBBER *in* MEXICO

An Account of a Two Years' Search for Rubber Producing Growths in Western Mexico

By GEORGE F. WEEKS

(*For economic reasons, active interest in the rubber producing growths native to the west coast of Mexico is in direct proportion to the price of rubber. The high rubber prices of* 1925 *immediately revived interest in the possibilities of bringing the region into production and investigations were being planned when the price of rubber declined. Any future rubber shortage, or any national emergency, would inevitably bring about the exploitation of some of these resources. For that reason* THE RUBBER AGE *welcomes this opportunity of putting on record at this time, the story of the two-year survey of Mr. George F. Weeks. This account is here made public for the first time. On account of its length, only a first installment can be printed in this issue.* EDITOR).

IT seems well to premise what is about to be said with regard to the natural rubber resources of the West Coast of Mexico by the explanation that the writer makes no claim to botanical or chemical erudition. He has been a newspaper man all his life and maintained more or less connection with that occupation during a prolonged stay in Mexico. Having been self-deported from his California home to its southern neighbor by the necessity of a radical change in scene and occupation in consequence of a threatening condition of health, he sought any possible opportunity for employment commensurate with his condition. Such an opportunity presented itself in a search for new rubber-producing growths in the Sierra Madre and Pacific Coast regions of the western part of the country, and what is set down here is the result of the observations made in this search.

Determining the presence of rubber in plant growths is for the most part a very simple matter and requires only basic instruction from the hands of an expert. Having gained certain elemental facts regarding the growths sought, professional botanists and authorities were subsequently consulted and the discoveries made were checked up in the light of the technical information thus gained, as will be noted. For a preliminary investigation of this kind technical knowledge is not an indispensable requisite. I applied to it the same principle that I had always followed in my newspaper work. Given or finding a clue, I merely followed it to its ultimate conclusion and wherever it led. This might, as it indeed did, involve the ascent and descent of lofty mountains, traversing jungles and forests, and the enduring of hardships of the variety incidentally and necessarily met in traveling in a rough and sparsely settled region.

During the greater part of 1907 and 1908 the writer was engaged in handling guayule shrub (the famous desert rubber growth of northern Mexico) on behalf of some American owners of a half-million acre tract of so-called desert land in the central part of the State of Coahuila, having headquarters in the pretty little town of Cuatro Cienegas. The various reduction plants in that and the adjacent States created a lively demand for the shrub and the region was ransacked for areas thereof. The price of wild and plantation Hevea rubber at that time was much higher than it subsequently became under increased production from plantations. The fortunate owners of guayule bearing lands not infrequently harvested crops which yielded many times the original cost of their holdings and made many of them wealthy.

While engaged in the guayule business a cursory study was at the same time made of other plants that might or might not contain rubber, it being a fact that the majority of the vegetable growths of the desert region carry a percentage of that product. In this way valuable information

Palo Blanco of the Hill Country

Palo Blanco in Full Bloom

Palo Colorado in the Sierra Madre

was gained that afterwards came into play in other directions.

In the latter part of 1908 I undertook a journey by mule-back from the terminus of one of the railways traversing the great interior plateau, across the Sierra Madre and to the Pacific coast, with the purpose of ascertaining, so far as a cursory examination would permit, what natural growths might be found possessing a rubber content sufficient to make their exploitation worth while.

Reports had drifted across the mountains that trees were to be found on the western slope and in the coast region which carried sufficient rubber in their latex to encourage investigation. Especially notable among these was a so-called *Palo Blanco* (White Tree), and also a *Palo Colorado* (Red Tree). My attention was to be centered upon these two growths, though at the same time nothing was to be neglected that might lead to the discovery of any tree, vine, shrub or plant containing the desired product.

The first *Palo Blanco* trees were found on the western slope of the Sierra Madre at an elevation of about 3,000 to 4,000 feet. At that height the weather in the winter months, at which time my journeying was commenced, was decidedly cool, and while an abundance of *Palo Blanco* trees were found, they were in a dormant condition and none could be seen that yielded more than a few drops of latex, though these responded to the simple test for rubber.

It was learned later that on lands nearer the sea level these trees, or at all events growths bearing the same name, were to be found in abundance. According to those who claimed to be acquainted with them, they were of two kinds, male and female, the latter yielding abundant supplies of latex carrying rubber during the hot and rainy seasons. But by the time these seasons opened, I had been obliged to return for awhile to the interior and was thus precluded from any further investigation at that juncture.

The information gathered from hearsay, however, and more especially from an acquaintance who had had occasion to investigate this growth, was encouraging, and led to the belief that the *Palo Blanco* was worthy of further investigation. As already stated, in the lower foothills and on the low lands of the coast a growth was encountered which was also a *Palo Blanco,* or White Tree, and which yielded rubber-carrying latex in quantity. Some of the people whom I consulted considered this the same growth as that of the mountains, but this did not coincide with my own observation. I was inclined on further investigation to class it with the tree called Chilte or Chicate, later encountered.

In the same region in the mountains where the *Palo Blanco* was found were large areas of the *Palo Colorado,* and at the time of my visit (January) several pack-trains were met laden with the gum which had been gathered earlier, treated by boiling and pressing in order to cleanse and preserve it, and was now en route to one of the guayule factories in Coahuila. I learned later that it was shipped to Germany.

I found that there were no less than three trees known by the natives as *Palo Colorado,* from the color of their bark, but that only one of them yielded rubber-carrying latex. The latex of this tree is sometimes gathered in cups from the diagonal gashes made in the bark of the trunk with a machete. I also obtained some by scraping or shaving the outer bark from the trunk with a machete, whereupon the latex exuded slowly and at once began to coagulate, forming a thin continuous layer or sheet. Commencing at the lower end of this exudation with a clean twig held transversely, the entire sheet was rolled up into an oblong snow-white mass.

Inquiry showed that it was possible to make contracts with responsible persons, such as village Presidentes or Mayors, as well as business men, to have quantities of the gum gathered and paid for by weight, the price being such as to afford a good margin for profit. Some that I saw had been molded into large balls a foot or more in diameter, but the gum was filled with bits of bark, leaves and other impurities, which had to be removed by boiling and other treatment prior to being pressed into oblong cakes for shipment. I was given to understand that an almost unlimited quantity could be obtained in this manner, and had numerous offers from natives desirous to engage in the extraction and preparation of the gum. Transportation, however, was a great difficulty, since the nearest railway with interior connections was several days' journey distant, and from ten days to two weeks was required for a loaded pack-train to cover the distance one way. While the region where this tree is found has many large mining camps, of ancient origin and producing abundantly, no wagon roads have ever been built therein and for over 300 years all transportation has been by pack animal.

Habitat of the Palo Colorado

I found the *Palo Colorado* at the various points visited—Otaez, San Andrés de la Sierra, San Pedro, San Gregorio, Bacis, Huahuapan, Tamazula, etc., and was reliably informed that there was an abundance of the tree in a belt extending practically over the entire length of the State of Durango, on the west slope of the Sierra, reaching also into Sinaloa, Nayarit and even farther south, though under different local names.

Having visited the points named, as well as many others, I next headed for Culiacan, capital of the State of Sinaloa, for I learned that an American company in that city controlled a couple of million acres or more of land in that State. I determined to ascertain what knowledge they might have of the existence of rubber growths thereon, and found that while they were aware of such existence, they had never done anything to develop this resource, and willingly encouraged the advent of outsiders desirous to engage in the venture.

In leaving the Sierra for the lowlands of the coast, a most interesting and valuable discovery was made. It was my practice to test every new growth of whatever kind that was encountered—tree, shrub, plant or vine—as to its rubber possibilities. Shortly after leaving Tamazula, on the boundary between the States of Durango and Sinaloa, my attention was attracted to a peculiar appearing and abundant growth of a novel description. From a common base several feet in circumference and of proportionate diameter, sprang scores of separate plant stems, crowded closely to-

gether and from an inch to an inch and a half in diameter at the base. They extended ten or a dozen feet in the air, falling gradually apart, then curved gracefully until the extremities were but a short distance from the ground. I measured some stems that were fifteen feet in length, the average being ten or twelve feet. There was no vegetation of any kind throughout the entire length of the stems, except at the extremities, where there were a few small leaves and some equally diminutive bright red flowers. To my amazement when I cut some of these stems from the parent with my machete, white milk flowed from the several parts as freely almost as though a small water pipe had been fractured.

While I was thus engaged a native passed by, and seeing that I was a stranger took it upon himself to warn me in the most kindly fashion regarding what he called a *Palo Malo* or Bad Tree. He said that the milk was *"muy venenosa"* (very poisonous), and that if I allowed any of it to splash in my eyes, as might easily happen from its abundance and the manner in which I was handling the plant, I would become permanently blinded. I must also be careful not to allow any of it to reach my stomach. Subsequently I found that the warning was well based, though I was never poisoned, as I took great care in handling this as well as other strange growths.

Tests Previously Made on Plant

Having ascertained that the latex indeed carried rubber, this appeared to me a promising field for further investigation, especially as I learned that the growth was abundant in all that part of the country. Hearing that the proprietors of a large hacienda at Pericos, some thirty or forty miles north of Culiacan, had made some tentative experiments in this direction, to determine the possibility of extracting rubber in paying quantities from the plant, I went thither. When my errand was made known, I was given a hearty welcome, as they had long wished for the advent of some one who would undertake the exploitation. The report proved correct so far as it went. Some of the latex had been extracted, coagulated and sent to Mexico City for testing. The chemist entrusted with the work (Professor J. McConnell Saunders of the National Medical Institute) had reported that he found a considerable percentage of rubber in the sample, and that he regarded it as having valuable possibilities.

To my great surprise, I learned that the native name for the plant, besides that of *Palo Malo,* was *Candelilla.* For a couple of years I had been more or less familiar with the desert plant known by the same name, which grows in juxtaposition with the guayule, in Coahuila and other States, and which is valued only because of the wax that exudes from the stems in scales and is recovered by the application of steam and hot water. But this growth is of small size, not more than a foot or eighteen inches in average length, the stems being round, with few or no leaves, and only a fraction of an inch in diameter.

The botanical name of the wax producing desert Candelilla is the rather suggestive but well merited one of *Euphorbia Anti-Syphilitica,* while the coast variety of heroic proportions is *Pedilanthus Involucrantus,* both being of the Euphorbia family.

I was assured that with Pericos as a center, practically unlimited quantities of the plant could be obtained, and was tendered the facilities of the hacienda for handling it. There was a fiber manufactory in successful operation, and the gathering and reduction of the Candelilla could be undertaken with moderate additional outlay. I was also told that tests had demonstrated that two years only were required to renew the growth from the original roots after the stems had been once removed, so that an indefinite supply could be depended upon for all time. (*To be continued in the February 25 issue.*)

Schaphorst's CHATS *with the* ENGINEER

By W. F. SCHAPHORST, M.E.

Rubber Belt Slip

PERHAPS it is not clear in the minds of many engineers who operate rubber belts why each per cent of belt slip means a loss of 1 per cent of the fuel. Thus, 1 per cent slip means 1 per cent fuel loss, 2 per cent slip means 2 per cent fuel loss, etc.

To explain why this is true I will use a hoisting engine for illustration, as shown in Fig. 1. This engine, we will say, is so arranged that it will raise a weight of 33,000 pounds one foot high in one minute, which is equivalent to doing the work of one horsepower. If this engine is equipped with a clutch ring as shown the power can readily be thrown on and off. When the power is on, all of the mechanical energy delivered by the engine is expended in lifting the weight.

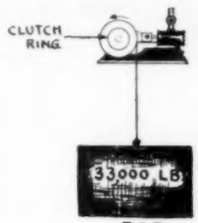


FIG I

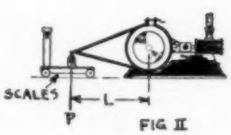


FIG II

Now let us assume that the clutch is adjusted so that the weight is lifted a few feet and while at that point the clutch ring slips in such a way that the weight is held suspended in mid-air. In other words, the weight does not move upward or downward at all while the engine is running at normal speed. The weight is "hanging there" and is certainly exerting a tension of 33,000 pounds throughout the cable. It is being held there by the "friction" of the clutch ring. If there were no friction the weight would fall. Therefore, the engine is doing work even though the weight does not move a millionth of an inch. In fact, the engine is doing just as much work as it would be doing if the weight were moving upward at the rate of one foot per minute. This is true for the same reason that in a Prony brake, Fig. II, the power of an engine is determined by measuring the pressure P on the scales, multiplying it by the "theoretical" distance through which it moves in one minute (which is $2\pi LN$) and dividing by 33,000. The brake and scales do not move at all, yet, power is being developed.

In the case of the hoisting engine and the 33,000 pound weight, the case is identical. In fact, many Prony brakes are designed on that very principle, i.e., with suspended weights. The behavior of the engine, cut-off, etc., is just the same when the suspended weight is not moving as when it is moving. The only way in which the power could be reduced with a weight moving more slowly would be to "gear down" the speed of the cable. Then the horsepower delivered by the engine would be directly proportional to the speed at which the weight is being raised, neglecting transmission friction through gearing, and assuming that there would be no slip in the clutch.

The same is true with belts. If we had a belt that did not move at all, but in which the tensions were the same as when pulling full load, the engine would be dissipating energy at the same rate at which it is spent when pulling full load. We would then have a belt-Prony-brake. Where belt slip is 50 per cent, one-half of the fuel is wasted, and

where there is no belt slip, no fuel is wasted on that account, but it is always directly proportional to the slip excepting in cases where tensions change while slip takes place. Usually, though, where slip is 5 per cent or thereabouts there is very little change in belt tension, if any.

For these reasons, in gasoline engine belts, where speed fluctuations are often rather violent, the slip occurs at the time when tensions are greatest and therefore each per cent of slip may represent more than one per cent of the fuel loss.

A slipping belt is therefore expensive, not only in the cost of the wearing out of the belt and lessened production, but in the cost of the wasted fuel.

Reclaimed Rubber Used in 1927

IF THE monthly reclaimed rubber consumption figures of the Rubber Association be taken as 80 per cent complete, a basis which government surveys of the entire American rubber manufacturing industry have proven to be a reasonable one, a total consumption of 174,000 long tons of reclaimed rubber in 1927 is indicated. On the same basis, the consumption in 1926 amounted to 164,500 long tons. During 1926 there was 46 per cent as much reclaimed rubber used in the United States as there was crude rubber used and in 1927 this percentage rose to 46.9 per cent. Since the increase is no less than one per cent, it may be presumed that the relative consumption of reclaimed rubber has about reached a point of balance, at least while the price of crude rubber remains about where it was during 1927. Monthly figures for 1927 are as follows:

CONSUMPTION OF RECLAIMED RUBBER IN THE UNITED STATES IN 1927

Month	*Long Tons*	*Per Cent to Crude Rubber Used*
January	12,100	38.3
February	14,100	46.7
March	13,300	36.7
April	16,300	45.3
May	15,400	44.4
June	15,200	44.8
July	13,500	46.2
August	15,400	46.1
September	14,400	53.
October	16,700	62.9
November	14,500	54.1
December	13,100	51.6
TOTAL	174,000	46.9
1926 TOTAL	164,500	46.

10 YEARS AGO

Items Reprinted from February 10, 1918, issue of THE RUBBER AGE

PORTAGE TIRES are being guaranteed for 5,000 miles. . . . The three leading accelerators in use are aniline, tetramethylenediamine and hexamethylenetetramine. . . . Mason has increased its daily tire production to 1,500 tires. . . . Goodyear provided entertainment for over 2,000 employees who joined the Army training schools at Camps Sherman and Sheridan by sending the Goodyear Friars to both camps. . . . Pearce Tire & Rubber Company of Ashtabula, Ohio, is contemplating increasing its capitalization from $100,000 to $200,000. . . . Fisk Rubber Company sales in 1917 were announced as $28,000,000, an increase of 40 per cent over the previous year. . . . Aniline Oil is quoted at 26 cents per pound. . . . The Ehrman Tire & Rubber Company, Chicago, Ill., recently opened its tire factory. . . . Mason Tire & Rubber Company expects to begin the manufacture of its new cord tire. . . . The tire is cured by the air-bag process which has proven the most effective manner of curing cord tires. . . . Kelly-Springfield reports profits of $2,700,000 on net sales of $14,000,000 for 1917. . . . Up-river, fine Para is quoted at 58 cents spot.

BOOK REVIEWS

MARKETING OF CRUDE RUBBER (With Trade Statistics) Trade Promotion Series No. 55. By E. C. Holt, chief, Rubber Division, Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C., 1927. Price 45 cents. 257 pp.

This publication is an amplification of Trade Information Bulletin No. 180, entitled "Marketing of Plantation Rubber" by J. J. Blandin, special agent of the Department of Commerce and published in 1924. The present volume describes the marketing of all the well better-known grades of crude rubber and also includes statistics of rubber production, consumption and stocks, where available, for every country of any importance as a producer or consumer of rubber. It is thus intended to supply much of the basic information necessary for the statistical purposes of rubber manufacturers and traders. Similar data has never before been collected and published in one volume.

A discussion of the restriction policy of the British Government in connection with rubber exports from the Middle East is also contained in the volume together with a complete statement of the present restrictive legislation and regulations in force.

The information concerning trade practices in European crude rubber trading centers was gathered by the author, E. G. Holt, chief of the Rubber Division of the Department of Commerce, during a special trip abroad. Previous reports resulting from the crude rubber survey authorized by the Sixty-seventh Congress have also been drawn upon as part of the material for the volume.

As an authoritative report covering the marketing methods prevailing in crude rubber trading in all the world markets the present publication is the most comprehensive survey that has yet been made and speaks well for the thoroughness of the economic studies made by Secretary Hoover's department.

* * *

AMENDED DESCRIPTION OF OFFICIAL TYPE SAMPLES OF COMMERCIAL GRADES OF CRUDE RUBBER. General Bulletin No. 631. Published by the Rubber Association of America, Inc., January 24, 1928. New York, N. Y.

RULES AND REGULATIONS TO GOVERN TRANSACTIONS BETWEEN SELLERS AND CONSUMERS OF CRUDE RUBBER IN THE UNITED STATES OF AMERICA. General Bulletin No. 632. Published by the Rubber Association of America, Inc., New York, N. Y. Effective February 1, 1928.

These two bulletins cover the latest revision of the rules of the Rubber Association of America relative to transactions as between its member involving the sale or purchase of crude rubber. In General Bulletin No. 609 of the Association, issued October 28, 1927, the crude rubber committee of the Association with the approval of the officers and directors, advised of the establishment of standard official type samples of crude rubber to serve as a basis for transactions between manufacturers of rubber goods and sellers of rubber. The establishment of these standard samples of commercial grades was reported in THE RUBBER AGE in the issue of November 25, 1927. The crude rubber committee of the association now presents the above General Bulletin No. 631 as an amended description of the official type samples, with the amended portions of the descriptions underscored for convenient comparison with the previous bulletin. Practically all the amendments listed pertain to packing methods and packing specifications. The standard type samples are maintained on file at the Association's headquarters for the purpose of inspection in cases of disputes.

The crude rubber committee of the Association has also been working for some time on the revision of the rules, regulations and standard form of contract to govern commercial transactions in crude rubber and the result of their labor, which has the approval of the directors of the Association, is the second publication under review—General Bulletin No. 632.

These two bulletins have been sent to the members of the Association with the earnest recommendations of the directors and the crude rubber committee that all rubber manufacturers make their purchases under these new rules, regulations and standard form of contract on and after February 1, 1928.

THE GENTLEMAN FROM MINCING LANE
reports current opinion in London's famous rubber market in every issue of THE RUBBER AGE

The London Letter

The Gentleman Talks About a "Tired" Rubber Market

LONDON, 27th January, 1928.

WITH the first quarter (November to January) of the sixth restriction year drawing to a close, "The Times" refers to the "tired" rubber market. (As the British spell the word "tyres" when applied to automobiles, the dignified "Times" was not punning). The market then is tired of waiting for the fulfilment of promises that increased consumption will overtake reduced production. The buying movement of last Fall has disappeared, prices are sagging and London stocks mounting week by week again. Uncertainty is the outlook for the immediate present, but the certainty of the future is in no way weakened, indeed it is greatly strengthened in British minds.

Is there any likelihood that the Colonial Office will make an announcement as to changes in the Restriction Scheme on February 1st, is the question which is at the bottom of the present uncertainty. It will be remembered that in his last announcement on the subject of rubber restriction, the Colonial Secretary of the British Government promised there would be no change in the Restriction Scheme prior to February 1st, 1928, and that then, as long notice as possible would be given before any changes went into effect. Mr. Amery, the Colonial Secretary, is touring in the dominions and hence would not be expected to make any change until his return. Furthermore, the trade is of the opinion that there is every reason why no change should be made at the present time or until the effects of the tightening-up of restriction in Malaya are seen. Why revise a law before the effectiveness of a thorough administration of the old law has been tested is the view taken. Symington & Sinclair, in their weekly review, describe their view of the future in the following words:

> "We have frequently expressed our opinion that the actual working of the restriction scheme has left much to be desired, but that any British Government could contemplate so suicidal an act as either of these proposals we simply decline to believe. In our opinion it is impossible for restriction to be brought to an end except when the exportable quota stands at 100 per cent."

This is a good stick of dynamite to blow up the present uncertainty, or part of it at any rate.

STILL, the market is slowly sliding down hill, prices having declined ½d per pound for all positions during the past week. True, this is normally a sluggish season in the rubber market, and this condition has been further accentuated by the recent Thames floods which damaged rubber stocks in a small degree, though for some days it was uncertain as to the extent of the damage. Similarly, the fire on the S.S. *President Polk* in New York harbor raised expectations as to the extent of rubber loss on this account. Again, it was found that the damage was only slight.

So much for the present—what of the future! The certainty to which I have already referred has to do with the fixed opinion in British circles that there is going to be a drop in world stocks of from 40,000 to 50,000 tons during 1928 if there is no change in the Restriction Scheme and American consumption holds up.

The steady encroachment of reclaimed rubber in America does not seem to have found a parallel in European manufacture yet. Will 1928 see any substantial development in that direction?

It is to the April-June quarter that opinion here is now looking for the full effect of severer restriction and increased consumption—the same quarter in which the advance started in 1925. Will American consumption expand with the return of Mr. Ford to full production? Your year-end reviews seem generally to forecast an extension somewhat into the New Year of a recession in business activity, to be followed by an upward curve again. Possibly automobile production, on account of Ford's 1927-28 plans will be an exception to this forecast.

Then again, on the production side, will the continued grumbling of estates whose production has been severely cut in the last few weeks, expand into a roar of sufficient volume to influence the action of the Government as to the policy of restriction? These are the typical "ifs" which are always to be found in rubber discussions. At present everything seems to point to the fact that American consumption is going to advance, British production retreat, and world's stocks drop substantially.

MANY operators in the London market are coming to doubt the accuracy and value of the American monthly rubber stock figures, as published by your Rubber Association, on account of the persistent inability to reconcile the stock figures with those covering imports and consumption. Some have expressed the opinion the figures are purposely coloured so as not to reflect the true condition. The majority, however, I believe would not hold the figures to be inaccurate by any reason other than that of accident and the faults of the system under which they are gathered. I note that the American company headed by the president of the Rubber Exchange of New York has pointed out that the discrepancy over a period of a year is quite small.

British rubber men are apt to compare the steadiness of the London stock figures with those of America without remembering that the latter principally represent scattered stocks in the hands of consumers instead of in a few registered warehouses. As consumers' figures, they are probably as good as could be expected.

The American consumption of only 25,500 tons in December was disappointing to London rubber interests. The failure of consumption in the United States in both 1926 and 1927 nearly to reach the predictions made at the beginning of those years is influencing British statisticians to be more conservative in their estimates this year. I suppose Americans would expect the skies to fall if London should once guess too low on your annual requirements.

Yours faithfully,
THE GENTLEMAN FROM MINCING LANE.

TRADE MARK

United States Rubber Company

MAIN OFFICE:

1790 Broadway, New York

Fifty-Three Factories
Branches in all Principal Cities

Manufacturers of All Classes of Rubber Goods, including—

"U. S." ROYAL CORD AND USCO BALLOON TIRES
"U. S." ROYAL CORD AND USCO CORD TIRES
"U. S." ROYAL CORD MOTORCYCLE BALLOON TIRES
"U. S." ROYAL CORD MOTORCOACH TIRES
"U. S." ROYAL CORD HEAVY SERVICE TIRES
"U. S." TWIN CUSHION, CUSHION, HIGH SIZE CUSHION and DEMOUNTABLE CUSHION TRUCK TIRES
"U. S." ROYAL, GREY, AND USCO TUBES
"U. S." BICYCLE TIRES, REPAIR MATERIALS and ACCESSORIES
"U. S." AUTO TOP MATERIALS "U. S." SPRING-STEP RUBBER HEELS USKIDE SOLES
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EDITORIAL COMMENT

Mutual Bondage

WHILE the American rubber consumer, contemplating rubber restriction, may feel chagrined that he is in the bondage of the British, he may find some comfort, or at least interest, in the fact that the grower is, in a similar manner, in bondage to the American consumer. The one produces most of the rubber, the other consumes most of it. Either one can be arbitrary and distress the other.

There has been much talk about the American consumer protecting himself from the unreasonable demands of his bondsman. As a matter of fact, not much that is permanent has been done. Commendable beginnings have been made, such as Firestone in Liberia. The most powerful factor of all, that of centralized buying, is after all only a temporary expedient. Anything that does not directly affect ultimate supply and demand cannot be regarded as a permanent safeguard.

But what is the bondage of the British to the American? Why, simply that three-fourths of the production of an enormous investment must be marketed in one place. What such bondage means was demonstrated in 1925 when the principle of conservation was given considerable thought in this country. The bondsman is not the American rubber industry—it is the American people, the ultimate consumers who dictate the policy.

Naturally, the British do not like a concentrated market any more than the Americans like a concentrated source of supply. They have tried to remedy their end of the matter no less assiduously than have the Americans. But it must be admitted that they have been little, if any, more successful.

In trying to develop a crude rubber market outside the United States the British have spent many hundreds of thousands of dollars. Part of this has gone to extend the use of rubber flooring. Another part has gone into experimental rubber roadways. Still another part has been used to broaden the uses of rubber in mining and engineering. Other expenditures have been along the line of educating the European public to make more common use of all sorts of rubber goods. Almost no effort has been spared to develop the market for rubber in what the statisticians always call "Other Countries," meaning, other than the United States.

Yet percentages have changed but little. Britain still produces about as big a share of the world's rubber, or does when she wants to. She certainly isn't prevented from doing so by anything that America has done. The United States still consumes about as big a share as ever. Her predominance as a market for British rubber is unchanged.

The answer, of course, is that instead of trying to get away from each other, these two countries ought to be trying to get closer together. But either one will tell you that the unreasonableness of the other has prevented such a Utopian ending. The truth probably is that both got away to a bad start and neither knows how to turn around.

A Commodity of Contradictions

THERE have been few instances where conditions surrounding the marketing of a commodity have presented such contradictory situations as have prevailed in the last few months in the crude rubber market. The present fairly firm market in the face of the apparent unfavorable statistical position of crude rubber is an anomalous situation in itself. The high record stocks now on hand in the chief trading centers and the decline over the last three months in consumption would be supposed to give a much sharper bearish influence to the trading than has been apparent. The last fortnight has seen several record trading days on the New York Rubber Exchange when the value of rubber transactions exceeded a $4,000,000 turnover within a single trading session. Yet the price levels for February and future deliveries have dropped very slightly and fluctuations between extremes have been confined within the narrow range of 300 points.

In the face of a continuation of the Restriction Act at the minimum quota of 60 per cent and a revision of the standard assessments of estates downward, new plantings in restricted areas are still going forward and estimates of an increased production are being aired with a remarkable spirit of 'laissez faire.'

Where one would expect to meet a depressed tone in the market today he is greeted instead by an atmosphere of unbounded enthusiasm and amazing optimism.

The RUBBER AGE

Published on the 10th and 25th of each month.
The Only Twice-a-Month Rubber Publication.

THE PALMERTON PUBLISHING CO., INC.
Publication Office, 1-3 Peace St., New Brunswick, N. J.
Editorial Office, 250 West 57th St., New York City
Telephones: Columbus 6430, 6431, 6432

THE RUBBER AGE is published on the 10th and 25th of each month by The Palmerton Publishing Co., Inc., a New York corporation. P. L. Palmerton, President; Earl D. Osborn, Vice-President and Secretary; T. J. Lawson, Treasurer. Publication Office, 1-3 Peace St., New Brunswick, N. J. Subscription rates: Domestic, $2.00 a year; Canada, $2.50; foreign, $3.00; single copies, 20c. Advertising rates on application.

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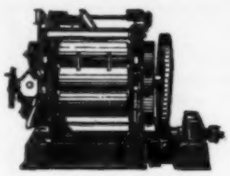
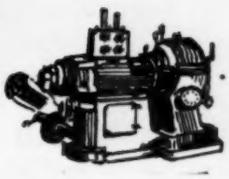
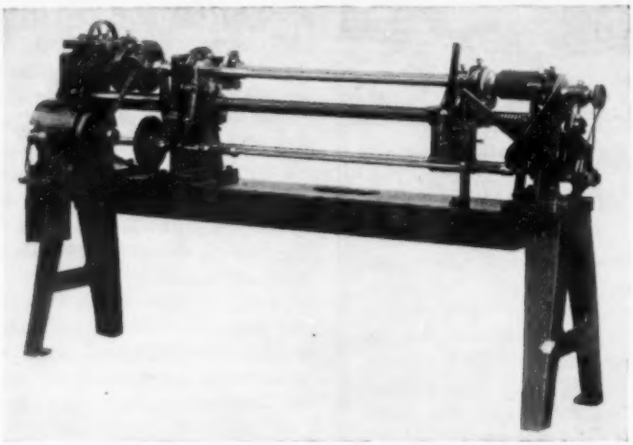


NEW EQUIPMENT *for* Rubber Factories



Automatic Friction and Rubber Tape Cutting Machine



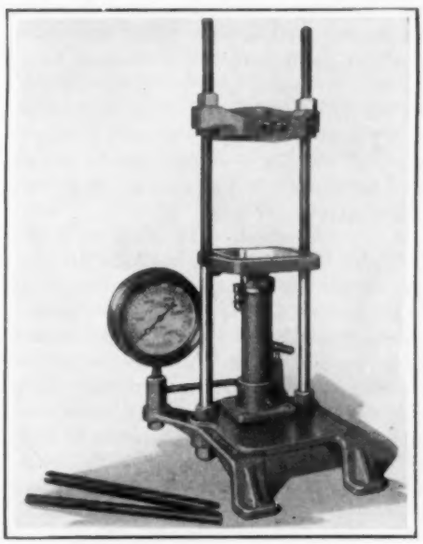
THE Black Rock Manufacturing Company, 181 Osborne St., Bridgeport, Conn., have recently introduced a new Automatic Friction and Rubber Tape Cutting Machine which is the outcome of many years of experimentation. The accompanying illustration shows the machine with the guards removed.

According to the manufacturers the operation of the machine is briefly as follows: The material is wound on a paper core and is placed in the machine on a mandrel having a diameter slightly less than the inside diameter of the core. The mandrel is rotated and the work driven by a chuck, which is rotated from the mandrel. The cutting is done at the extreme right end of the mandrel by a driven circular knife, and the cut rolls delivered to a chute.

The work is fed intermittently to the knife. The width of the cuts are controlled by change-gears at the extreme left hand of the machine. Through a change-gear and change-sprocket system, different speeds necessary for cutting different sized rolls are obtained. The machine is driven by a one H. P. motor and occupies a space of 6 ft. by 2½ ft. Its cutting speeds on either friction or rubber tape are: 1 and 2 ounce rolls at 65 per minute; 3 and 4 ounce rolls at 45 per minute and 8 ounce rolls at 25 per minute. Patents have been applied for.

Carver Laboratory Press

A SMALL but powerful hydraulic press for laboratory use is being marketed by Fred S. Carver, mechanical engineer and manufacturer of hydraulic equipment for special uses, whose office is at 94 West street, New York City. This press is well adapted to tests and small scale molding of rubber and plastic materials. The opening is quickly adjustable for any such requirements.



Electrically heated platens are used with it, equipped to operate from lamp socket. In addition to molding, the press is useful in compression and crushing tests.

This piece of laboratory equipment comes complete with hydraulic hand pump and gauge. In other industries it is used for such purposes as pressing out oils and dehydrating and separating liquids from solids.

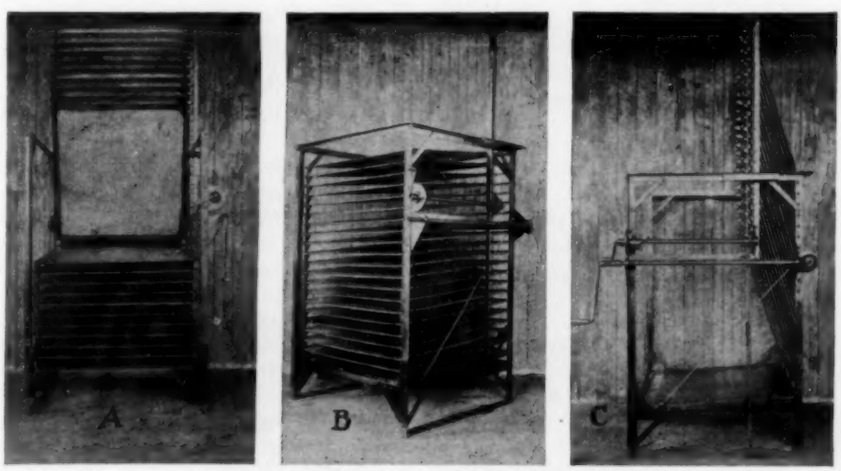
Spindel Stock Cooling Rack

AN AUTOMATIC rack for cooling milled rubber has recently been perfected and placed on the market by F. Spindel & Company, Bristol Pike, Morrisville, Pa. This rack, as shown in the accompanying illustrations, consists of bar steel frames, pivotally mounted shelves and a lifting arrangement so that the shelves can be swung to a raised position.

The illustrations give a general view of the racks. A is a front view showing a number of shelves raised; B is a general view of the rack with all the shelves lowered; C is a side view showing all the shelves in a raised position ready to be lowered by a turn of the handle.

The shelves are made of perforated steel and are open on all sides thus permitting free passage of air. Space has been conserved between the shelves so as to give the maximum amount of storage for a given space. The catch bar which holds the shelves in a vertical position can be folded down if it is necessary to move the racks through low doorways.

According to the manufacturers several dozen racks are in use in a number of rubber factories in New Jersey.



Spindel Automatic Stock Cooling Racks

NEWS of the INDUSTRY

Financial—Business
Building Operations
Personals
New Products

GROUP FORMATION OF CHEMISTS CONTINUES

Los Angeles Effects Permanent Organization With Stringfield as Chairman. First Akron Meeting to be Held on Feb. 15—To Discuss Water Problems.

THE second local group to be formed within the Rubber Division of the American Chemical Society was organized on January 20 when 44 rubber men from Southern California held a pleasant meeting at Los Angeles. The New York group, the first to be organized, met on January 11, as previously reported. The third group, to represent the Akron district, will be formed on February 15 when a meeting will be held at the Akron City Club.

R. B. Stringfield, chief chemist of the Goodyear Tire & Rubber Co. of California, was elected chairman of the Southern California group for 1928. He had acted as temporary chairman while the first meeting was being organized. A committee to perfect organization and to arrange for future meetings was chosen with membership as follows: C. R. Park of Goodyear (chairman), E. S. Long of Golden State Rubber Mills and A. F. Pond of the Samson Tire and Rubber Company.

Herbert A. Endres Speaks

The speaker at the Los Angeles meeting was Herbert A. Endres of the Celite Company of Lompoc, Calif. His talk on "The Crystallization of Sulphur in Rubber and the Phenomenon of Blooming" was received with such interest that the crowd kept him on his feet for nearly an extra hour answering questions. The opportunity for such complete discussion of interesting subjects was one of the purposes of the group organization.

The slides with which Mr. Endres illustrated his talk were much admired. The collection represented some beautiful work in photo-micrography. Some of them have been published in the chapter on sulphur which Mr. Endres wrote for Jerome Alexander's book on "Colloid Chemistry."

Dr. J. E. Bell, chairman of the Southern California Section of the American Chemical Society, extended greetings from that section and a number of others made brief speeches. In view of the small number of rubber companies in the district, the attendance of 44 was regarded as very good and as a guarantee of interest that will make the organization permanent.

The organization meeting of the Akron district group on February 15 will be marked by an address by Dr. G. F. Lamb of Mt. Union College on "The Distribution and Seasonal Fluctuation of Akron's Water Supply." The selection of such a topic has brought indications from such companies as Goodyear, Firestone and Miller that their engineers who are concerned with water problems will attend and join in the discussion.

Tickets for the Akron meeting have been selling rapidly. It was originally planned to hold the meeting at the University Club in Akron but the heavy reservations made it apparent that the larger quarters at the City Club would be needed. R. P. Dinsmore, Goodyear chief chemist, who has the organization of the group in hand, reports that all the technologists in the Akron district are enthusiastic about the group meetings and success for the movement seems assured.

NO CHANGE MADE IN RESTRICTION QUOTA

The British Colonial Office announced on January 31 that there would be no change in the exportable allowance of crude rubber under the Restriction Act from the present quota of 60 per cent. The London average spot price for the quarter just ended was 19.023d or approximately 2d below the pivotal price of 21d established under the Act.

RUBBER ASS'N OF CANADA TO HOLD ANNUAL BANQUET

The annual banquet of the Rubber Association of Canada will be held at the Windsor Hotel, Montreal, on the evening of Tuesday, February 14. The principal speaker will be the Hon. James Malcolm, Minister of Trade and Commerce of Canada. Several representatives of the rubber industry of the United States, including A. L. Viles, general manager of the Rubber Association of America, will attend.

The annual meeting and election of officers of the Canadian association will also be held this month.

GOODRICH STATEMENT SHOWS RECORD SALES

New Income $11,700,000 — Current Assets Are Six Time Liabilities— Board Elects J. R. Swan Member— Votes to Retire 11,880 Preferred.

FOLLOWING the regular quarterly meeting of the B. F. Goodrich Company at the New York offices of the company on January 25, the directors announced that the net sales for the fiscal year ended December 31, 1927, were in excess of $151,000,000, the highest in the history of the company. The net income for the year, after deducting adequate depreciation on properties, provisions for Federal taxes and a contingency fund of $1,000,000, was approximately $11,700,000.

Current assets as of December 31, 1927, were approximately $71,000,000, while current liabilities stood at approximately $12,000,000. One-third of the $15,000,000 5 per cent Serial Notes outstanding January 1, 1927, were retired on January 15, 1927, and a second $5,000,000 of these notes due January 15, 1928, have been paid, leaving only $5,000,000 now outstanding. The directors also approved the retirement of 11,880 shares of preferred stock in accordance with the provisions of the charter. The regular annual audit of the company's accounts is now in progress and upon its completion the annual report will be published in the usual manner.

Swan Elected On Board

Joseph R. Swan, president of the Guaranty Trust Company, of New York, was elected as an additional member of the board of directors.

Dividends on the preferred stock was declared as follows: $1.75 per share payable April 2, 1928, to stock of record at the close of business March 9, 1928, and $1.75 per share payable July 2, 1928, to stock of record June 8, 1928. A dividend of $1.00 per share was also declared on all common stock without nominal or par value, issued and outstanding February 10, 1928, payable March 1, 1928, to stock of record February 10, 1928.

Henderson Incorporates

Announcement has been made by F. R. Henderson, president of the Rubber Exchange of New York, Inc., of the organization of a new company under the style of F. R. Henderson Corporation, 44 Beaver Street, New York City, N. Y.

FINANCIAL NEWS

RECLAIMING COMPANY INCREASES EARNINGS

The financial statement of the Akron Rubber Reclaiming Company for the year 1927, which was sent to stockholders recently, shows gross sales totaling $1,250,511 which is a substantial increase over the sales of the preceding year of $1,099,967. The report indicates a steady growth for the company in the face of keener competition than has been experienced in previous years.

Earnings after deduction of $75,221 for Federal taxes, and depreciation were $126,201, or equal to $3.35 per share on the common stock after deducting $25,256 for preferred dividends. Current assets stood at $262,424 with current liabilities amounting to $80,452, showing a ratio of more than three to one. A dividend of $1.00 per share was declared on the common stock.

In a statement accompanying the report to the stockholders, B. O. Etling, president of the company, said: "In a year marked with an extremely competitive market on our product, we have continued to operate on a 24-hour basis six days a week, and we believe this schedule will be maintained during the coming year.

"At the end of the year we find ourselves well supplied with raw material purchased at favorable prices with a normal inventory of finished products, with no bank indebtedness, and our product is in sufficient demand at fair prices to justify the opinion that 1928 will be at least as prosperous as 1927."

Exchange Seat Sold at $6,500

Another advance in the price of seats on the Rubber Exchange of New York was made this month when H. W. French, of the H. W. French Company, Inc., New York, purchased for another, an extra membership of Otto Zieseniss, of the Paris branch of H. Hentz & Company, for $6,500. This is the highest price yet paid for a Rubber Exchange membership, the last one having been sold during last December for $6,000.

KELLY-SPRINGFIELD WINS JUDGMENT FROM DEALER

A verdict for $91,588.03 was recently handed down in the Onondaga County Supreme Court (N. Y.) in favor of the Kelly-Springfield Tire Company against Paul Zee, a tire dealer doing business in Miami, Florida, and Syracuse, N. Y.

The suit was to recover a large balance from the sale of tires under a written contract with Mr. Zee. The contract carried the specific clause that the terms of the agreement should not be changed without the written consent of certain sales executives of the Kelly-Springfield company and the decision is regarded as an important one in supporting the authority of sales executives in making binding sales agreements with distributors and dealers.

NORWALK TIRE COMPANY ELECTS NEW OFFICERS

John W. Whitehead has been elected president of the Norwalk Tire & Rubber Company, Norwalk, Conn., succeeding William B. Miller. Mr. Whitehead, who was formerly with the Diamond Rubber Company, of Akron, began his career with the Norwalk firm in 1914 as bookkeeper and rose to sales manager just prior to his elevation to the presidency. Mr. Miller remains on the board of directors.

At the same meeting of the board which elected Mr. Whitehead president, two other promotions were announced. Louis P. Arnold was elected second vice-president and Dr. W. F. Russell was named as secretary.

Reports are current in financial circles that the company will shortly issue $300,000 in 7 per cent debentures to mature in three years. The financial statement of the company as of December 31, 1927, shows the concern free from bonded indebtedness.

The New Jersey Rubber Company at Lambertville, N. J., is operating at full time again after having been closed down for several weeks. The company is in the rubber reclaiming business exclusively.

Late Stock Prices

	Last Price		—1928—	
	Feb. 4	Jan. 19	High	Low
Ajax	12⅞	12¾	14⅜	11¾
Firestone	216	210	224	210
do. 6% pfd.	110	110	110	108
do. 7% pfd.	109½	110⅛	110⅛	108
Fisk	16⅜	16¼	17¾	16¼
do. 1st pfd.	89⅞	96¾	98	89
General	184	183	190	180
do. pfd.	111	111	111	100
Goodrich	93½	89¾	99⅜	86½
do. pfd.	111½	111⅜	112	110½
Goodyear Com.	67⅝	67	72½	66
do. pr. pfd.	99	99	99½	96
do. pfd.	100½	120	120	100
Hood	42	42	43	42
India	18	18	22	16
Intercontinental	18⅝	19⅜	21⅜	19¾
Kelly Springfield	23	23⅛	27⅜	22½
do 1st pfd.	77	76½	78	76
do. 8% pfd.	78	79½	84	78
Lee	20¼	18	22⅝	17¼
Miller	24¼	25	27½	24
do. pfd.	94¾	97	97½	92
Mohawk	40	30	30	20
do. pfd.	75	63	75	55
Seiberling	42	40½	42½	41¼
do. pfd.	103	105	105	102
Star	1	1⅛	2½	1
U. S. Rubber	58⅝	59¼	63¼	56
do. pfd.	107	109	109⅜	104
U. S. Rubber Reclaiming	16	16	16½	14½
do. pr. pfd.	—	—	—	—
do. series A	—	—	—	—

FALLS RUBBER ELECTS KRATZ AS PRESIDENT

Board of Directors Effects Reorganization—Financial Statement Shows Company in Good Position—Sales in 1927 Show Gain of 40 Per Cent.

THE promotion of G. D. Kratz from vice-president to president of the Falls Tire & Rubber Company, of Cuyahoga Falls, Ohio, was recently announced following the annual meeting of the board of directors. Mr. Kratz succeeds J. O. King, who retires from active management in the business but will retain his membership on the board.

Others officers elected at the meeting were W. P. Cline, vice-president and treasurer; F. H. Comey, vice-president, secretary and factory manager. Both of these new officers have had long records of service with the company.

The meeting of the board was the shortest in the company's history and the reorganization of the executive personnel was reported to have been effected with the harmony of the entire board.

The board of directors announced that the sales for the company during 1927 amounted to a 40 per cent gain over 1926. Net earnings totaled $2.60 per share of common stock after deductions for preferred dividends. The company's financial statement as of November 30, 1927, shows current assets of $629,294 as against liabilities of $248,539.

Mr. Kratz, the newly elected president of the company, made his first connection with the rubber industry with the Diamond Rubber Company in 1912 and later went to the Norwalk Tire & Rubber Company, at Norwalk, Conn., but returned to Ohio in 1917 to join the Falls Rubber Company. Prior to his succession to the presidency, he has held the positions of chief chemist, plant superintendent, sales manager and vice-president with the organization.

Insulation Companies Merge

The Plant Rubber & Asbestos Works, of San Francisco, Cal., has recently acquired the stock and good-will of the Southern Asbestos & Magnesia Company, Los Angeles, Cal. The business of the latter company, however, will be continued under their old name and their same line of Samco air cell pipe covering and board will be manufactured as before. The new officers of the company will include Sydney L. Plant, president, and Wilmer Bingord, vice-president and general manager. Complete stocks of heat insulation materials will be manufactured by the company including piston rod and sheet packings.

FIELD RESIGNS FROM LEE TIRE & RUBBER CO.

The Lee Tire & Rubber Company of New York, Inc., has announced the resignation of Harry E. Field as vice-president and general sales manager. While no successor was mentioned at this time it was stated that A. A. Garthwaite, general manager of the company, would temporarily assume the duties of the post left vacant by Mr. Field.

Mr. Field was identified with the rubber industry as early as 1900 when he was manager of the Denver branch of the Hartford Rubber Works. In 1906 he became sales manager of the company with offices at Hartford and later was elected vice-president, which position he held until the United States Tire Company took over the property. In 1913 he formed the Kelly Field Company to handle the sales of the entire output of the Lee Tire and Rubber Company of Conshocken, Pa. Shortly thereafter he became directly identified with the Lee company as sales manager and in 1921 was elected vice-president of the organization, which position he has just vacated.

MOVES RESEARCH WORK TO WEST VIRGINIA PLANT

The Rubber Service Laboratories Company, of Akron, has announced that effective at once it will consolidate all research and development work at the chemical plant of the company at Nitro, W. Va., retaining at the Akron laboratories only the service compounding work.

The company maintains one of the largest compounding service laboratories catering to the rubber industry and reports that business has grown to such proportions that all the space at the Akron laboratories is needed for service compounding work and the sales organization with the result that all research and development work as well as manufacturing will now be concentrated at the Nitro plant. C. O. North, secretary and treasurer of the company, who is in charge of research and development, will hereafter have his headquarters at the Nitro plant instead of Akron.

Exchange Members Suspended

The suspension of A. C. Forney and W. C. Murphy, two members of the Rubber Exchange of New York, for a period of one week, was announced from the rostrum of the Exchange on January 19, by Walter Dutton, secretary. These are the first suspensions in the history of the Rubber Exchange and were made for technical violation of the rules.

CATALPO!

HIGHLAND PARK MAY MANUFACTURE TIRES

Rumors have been persistent in Detroit to the effect that the Highland Park plant of the Ford Motor Company is to be utilized for the manufacture of tires, probably by the Firestone Tire & Rubber Company. Practically all the major operations previously carried on at this plant have been transferred to the Fordson Plant of the Ford Company. All attempts to secure any confirmation of the rumor from the Ford company have been met with a consistent refusal to make any comment whatsoever.

Another Plantation Merger

Following close on the recent important merger of the United Serdang and Amalgamated companies in London, comes the announcement from the Anglo-Java Rubber and Produce Company that the vote by the stockholders on a proposal to acquire various Dutch estates totaling 20,000 acres has been acted upon favorably. The company already has a planted acreage of 10,000 acres and with the contemplated acquisitions it will become one of the four largest producing company in the East. The meeting of the shareholders which was held in London on January 16, authorized the increase in the company's capital from £380,000 to £1,250,000, the additional capital to be used as the purchase price for the new areas to be acquired.

Gets Big Ad Contract

The Firestone Tire & Rubber Company, which has for years been handling much of their own advertising, has recently placed their account with N. W. Ayer & Sons., Philadelphia. It has been estimated that the Firestone advertising account has been in excess of $2,500,000 annually for the last few years.

The Department of Commerce has released today a report of the Rubber Division of the Bureau of Foreign and Domestic Commerce entitled "Marketing of Crude Rubber," which is the most comprehensive survey published on marketing methods prevailing in rubber trading centers throughout the world.

CLAPP RUBBER TO MAKE RUBBER PAVING BLOCKS

The E. H. Clapp Rubber Company, of Hanover, Mass., manufacturers of reclaimed rubber and extruded rubber products, have installed machinery and will commence to manufacture rubber paving blocks, the invention of A. Webster Butler, of Brockton, Mass. Experiments have been going on for some time and sections of roadway paved with the product have been laid in Brockton and Hanover where they have been very successful.

The Clapp Rubber Company is one of the oldest in the industry dating back to 1869 when the founder, the late E. H. Clapp, first started to reclaim rubber in a shop near Roxbury Crossing, Mass. Present officers of the company include G. A. Clapp, president and E. H. Clapp, treasurer.

BLACKROCK NOW MAKING HIGLEY SAWING MACHINES

Manufacturing rights to the well-known Higley "Cold-cut" sawing machines have been recently acquired by the Blackrock Manufacturing Company, 181 Osborne Street, Bridgeport, Conn. Higley machines are made in two types, the 'swing carriage type, made in four sizes, 6, 8, 9½ and 10½ inch for cutting round bars, and the table type for cutting material up to 15½ inch. Several of the large rubber companies, as well as mold manufacturers, use these machines in sawing molds into sections. Sales rights are still held by the Higley Machine Company, South Norwalk, Conn.

Goodyear Blimp Causes Suit

A farmer living near Marlboro, Ohio, has entered suit in the common pleas court at Canton, against the Goodyear Tire & Rubber Company for $10,000 damages for injuries said to have been received when he was thrown out of his farm wagon after his team of horses had been frightened at the Goodyear 'blimp' which passed over his property. The case has not come to trial.

The Chicago branch of the Mohawk Rubber Company, of Akron, has moved to larger quarters at 1348 S. Canal street. The new Chicago location is on the ground floor and within a few blocks of the Loop.

Closing Prices on Rubber Exchange of New York, Inc.

JANUARY 20 TO FEBRUARY 4, 1928

Date	Spot	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Sales*
Jan. 20	40.00	39.90	40.20	40.40	40.70	41.00	41.00	41.20	41.30	41.50	41.60	41.80	.....	98
21	40.10	40.00	40.40	40.70	41.00	41.20	41.30	41.40	41.60	41.70	41.80	42.00	.....	52
23	40.00	39.80	40.20	40.50	40.70	40.90	41.10	41.20	41.40	41.50	41.60	41.80	.....	84
24	40.00	40.00	40.20	40.50	40.70	40.90	41.10	41.20	41.30	41.30	41.50	41.60	.....	109
25	39.90	39.80	40.10	40.30	40.60	40.80	40.90	41.00	41.10	41.30	41.40	41.50	.....	228
26	39.60	39.40	39.50	39.80	40.10	40.30	40.50	40.60	40.60	40.70	40.80	41.00	.....	650
27	39.20	38.90	39.30	39.30	39.70	40.00	40.20	40.30	40.40	40.60	40.70	40.90	.....	1,012
28	39.30	39.00	39.40	39.60	39.80	40.10	40.30	40.40	40.50	40.70	40.80	41.00	.....	247
30	38.80	38.50	38.80	38.80	39.10	39.40	39.70	39.80	39.90	40.10	40.20	40.40	.....	866
31	38.60	38.40	38.70	38.80	39.20	39.40	39.60	39.80	39.90	40.00	40.20	40.40	.....	1,111
Feb. 1	37.60	37.40	37.60	37.80	37.90	38.20	38.40	38.60	38.70	39.00	39.20	39.30	.....	2,000
2	37.60	37.50	37.80	38.10	38.30	38.60	38.90	39.00	39.10	39.40	39.60	39.70	39.90	2,077
3	3720	37.00	37.30	37.40	37.50	37.90	38.10	38.30	38.50	38.70	38.90	39.10	39.30	1,203
4	37.10	36.70	37.00	37.30	37.40	37.60	37.80	38.10	38.30	38.20	38.50	38.70	38.90	409

(*) In lots of 2½ tons each

A Page of Timely Foreign Rubber News

NEW TRENDS IN BRITISH WATERPROOFING TRADE

Following a wholly excellent and exceedingly prolonged fall season, the British rubber waterproof trade has now got into its regular winter stride. Both proofers and makers-up are finding conditions quiet at present, and the majority of them are now concentrating upon sampling for the spring. There is great speculation as to what cloths and proofings will be the fashion next season, the feeling being for indianas in the first place and for poplins in the second. Poplin has not been very much employed in the rubber clothing trade during the past few years, and the present time seems opportune for its revival. So far there has been no actual demand for this material, but there have been numerous inquiries. Should poplins come in, this will probably affect the artificial silk trade.

The raincoat trade continues brisk, and the present demand is principally for tweeds. Cloth prices remain firm, with a rising tendency in the case of woolen mixtures. The export trade is quiet. Demand for mechanical rubber goods is weak, and domestic competition very keen.

DUNLOP CO. PURCHASES THEIR LONDON PREMISES

Announcement has just been made of the purchase by the Dunlop Rubber Company, Ltd., of the ground lease of St. James' House, St. James' street, London. The building is the latest of the fine new blocks of buildings erected in that thoroughfare. The upper floors of St. James' House have been in the occupation of the company for the last few months. The lease of the property has 80 years to run, and it is understood that the purchase price is in the neighborhood of a quarter of a million sterling ($1,250,000).

Tire Imports Worry Germans

The popularity of American tires and inner tubes on the German market, since the repeal of the German import restrictions in October, 1925, has caused the German tire manufacturers to make a strenuous protest and has gone so far as to take the form of a circularization of the retail tire dealers, urging the purchase of only German made tires. In view, however, of protests made to official circles on the part of foreign manufacturers in the market, the promise was recently secured from the German tire manufacturers associations that no further circulars of a similar character would be distributed.

According to the Department of Commerce, Washington, D. C., the imports of automobile casings into Germany increased from 29,414 in 1925, to 223,392 in 1926, and to 269,030 during the first nine months in 1927. Imports from the United States amounted to 8,937, 68,783 and 131,157 respectively. At this rate the increase for 1927 of American casings is expected to be more than 100 per cent over 1926.

Lord Colwyn and Sir Henry Wickham at the Recent "One Day" Rubber Exhibition, London

RUBBER PURCHASES BY SOVIET IN U. S. HEAVY

The Soviet Union purchased in the United States during the year 1927, through its official purchasing agency, the Amtorg Trading Corporation, 165 Broadway, New York City, crude rubber to the value of $1,370,204 and machinery and equipment for use in the Russian rubber industry in the sum of $81,605. According to an announcement by the trading corporation, these figures show an appreciable gain over similar purchases made during 1926.

Rubber Furniture

At the recent British rubber industry exposition various articles of furniture, manufactured entirely or in part of rubber, were exhibited. The range of articles included theatre seats, household floor mats and stair treads. A lounge room was also shown equipped with rubber-topped tables and chairs.

D. E. I. Production in 1927

An official estimate by the Department of Commerce of the rubber production of the Netherlands East Indies for 1927 puts the figure at 225,000 metric tons, dry weight, or 221,445 long tons.

SIX FOREIGN RUBBER FACTORIES NOW IN U. K.

Six foreign tire factories will be producing tires in Britain this year. The decision of these firms to manufacture their products in the United Kingdom is the result of the Government's action in reimposing the McKenna import duties. The firms are the Pirelli, Michelin, India Tire, Overman, Goodrich and Goodyear. Pirelli is building a factory at Eastleigh and Michelin is finishing one at Stoke-onTrent. The India Tire Company has taken over the airship factory at Inchinnan, near Glasgow, and the Overman Company now occupies the works of the Midland Rubber Company, of Birmingham. Goodyear has just started production in its new factory in Wolverhampton, near Birmingham. The British Goodrich company has already had its factory at Leyland, Lancashire, in operation for some time. With Dunlop, Goodyear, Overman and other tire companies operating in and around Birmingham, the city looks in a fair way to become a British Akron.

To these six foreign tire companies may be shortly added the Firestone Tire & Rubber Company, which is also negotiating for a factory in the Midlands.

German Rubber Consumption

Germany's consumption of crude rubber for the first ten months of 1927 showed a decided gain over the corresponding period of 1926, according to the net imports into that country. The total imports for the 1927 period were 31,574 long tons, or more than 80 per cent over the total of 17,205 tons imported during the first ten months of 1926.

Russian Synthetic Rubber

Basil Miles, American Commissioner to the International Chamber of Commerce, has reported to his Washington headquarters that the Red Triangle Rubber Works in Leningrad, Russia, claims to have invented a new method of manufacturing synthetic rubber from petroleum waste. This material is now said to be produced on a "semi-factory" scale and the establishment of a plant at one of the oil refining works is contemplated.

Ceylon's Standard Production

The standard production for Ceylon, under the operation of the Stevenson Rubber Restriction Act, for the year ending October 31, 1928, has been assessed at 76,300 tons, according to a report received by the Department of Commerce. Unused export coupons on November 30, 1927, were estimated to total 6,500 tons.

The assessed standard production for the year ended October 31, 1927, was 73,839 tons.

The Last of a $2,000,000 Tire Order

Six Carloads of Tires Leaving Dayton Factory On Way to Texas

THE accompanying photograph shows a six-carload shipment of tires leaving the plant of the Dayton Rubber Manufacturing Company, Dayton, Ohio, the last of a consignment totaling $2,000,000 worth of tires and tubes shipped to the Hicks Rubber Company, Waco, Texas, during 1927. This was an average of a carload every three days.

The Hicks Rubber Company, with fifty stores, are the exclusive agents of the Dayton company in the state of Texas and showed a sales gain in tires during 1927 of approximately 25 per cent over 1926. The company began selling Dayton tires in 1921.

LAMBERTVILLE COMPANY MOVES TO NEW ENGLAND

The Lambertville Rubber Company has announced that they have transferred all of their manufacturing activities from the Lambertville, N. J., plant to the Middleton, Conn., factory of the Goodyear Rubber Company with which they are affiliated. Such equipment at Lambertville as can be used in the Middletown plant will be transferred there. It is also expected that at least a part of the working force at Lambertville will be transferred to the Connecticut factory.

The company will continue to maintain the Lambertville plant but will use it as a service branch and distributing center for the eastern trade. The company have been the manufacturers of rubber boots and shoes since 1875 under the trade-name of "Snagproof" footwear. They have employed an average of 400 people at the Lambertville plant.

The change to Middletown is made chiefly because of the surplus manufacturing capacity at the Connecticut factory and the economies possible by concentrating production at one factory. It is understood that the Middletown plant will close on February 3 for two weeks while the machinery from Lambertville is being installed.

Litter Selling Pine Products

D. H. Litter & Company, New York City, have recently been appointed sales agents for the Louisiana Pine Products Company, Inc., Shreveport, Louisiana. This concern is manufacturing turpentine, pine tar, pine tar oil and tar made in grades suitable for use in rubber compounding. Its plant at Sterlington, Louisiana, now has an operating capacity of burning twenty tons of wood per day, with plans for enlargement.

White & Co. Move

White & Co., dealers in crude and reclaimed rubber and the "Whico" line of softeners, announce that they have moved their offices from the Flatiron Building, Akron, to the Akron Savings & Loan Building.

Northern Rubber Company

The Northern Rubber Company is reported to have purchased part of the factory property of the Ballardvale Mills Company, Ballardvale, Mass, near Lawrence and will begin operations as soon as the necessary repairs and changes have been completed. The officers of the recently organized Northern Rubber Company include J. Arthur Jenkins, president; Thomas E. Eaton, treasurer and Everett Sweet, superintendent.

LAMBERT RUBBER CO. NAMES NEW EXECUTIVES

Changes in the executive personnel of the Lambert Tire & Rubber Company, Akron, O., as announced after the recent meeting of the board of directors of the company, include the promotion of J. W. Dessecker to the position of secretary and assistant treasurer. He also succeeds C. J. Arnold, who recently resigned as a member of the board. Mr. Dessecker joined the Lambert organization last year at the time when the company was reorganized by George W. and J. P. Seiberling. Prior to that time he had been associated with the Star Rubber Company and for three years occupied the post of secretary of the firm.

J. P. Seiberling was elected vice-president in charge of sales and will continue to serve as a director. During the last year he has served as secretary in which place he is succeeded by the new appointment of Mr. Dessecker.

Holds Clay Conference

The annual convention of the clay mine superintendents and salesmen of the United Clay Mines Corporation, Trenton, N. J., was held at the home office in Trenton, on January 23-26. Manufacturing and sales plans for 1928 were discussed and addresses were made by G. C. Crossley, president, and C. C. Engle, vice-president. This company makes the well-known Congaree and Argosite brands of clay for the rubber industry as well as other grades for the ceramic and paper trades.

Moves to Baltimore

The New Process Cork Company, of Brooklyn, N. Y., manufacturers of rubber stoppers, have consolidated with the Crown Cork & Seal Company, of Baltimore, Md., and will remove their manufacturing operations and executive offices to the latter place.

The Okonite Company, of Passaic, N. J., has recently taken over the Hazard Manufacturing Company, at Wilkes-Barre, Pa., and will operate the plant under the name of Hazard Insulated Wire Works, Division of The Okonite Company.

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GENERAL TIRE VOTES NEW FINANCING PLAN

Stockholders Authorize New Six Per Cent Preferred Issue to Retire Present Outstanding Seven Per Cent Stock—Shows Gain in Sales.

AT THE recent meeting of the stockholders of the General Tire & Rubber Company, at Cleveland, O., the proposal was favorably voted upon to enlarge the company's capital by issuing $3,500,000 in new preferred stock, at the same time calling in all of the present outstanding preferred, amounting to $1,420,000. It was further voted to amend the charter of the company to permit the additional issuance of preferred from time to time up to $6,500,000, as the business of the company continues to expand.

The old preferred issue is a 7 per cent stock but the new issue of $3,500,000 will be 6 per cent, exchangeable on a share for share basis for the old, plus $10 in cash and a dividend adjustment as of the date of exchange.

The average net earnings for the past 5 years were $1,417,992 or seven times the dividend requirements on the new preferred stock soon to be outstanding and in 1927 alone they were the equivalent of eleven times such requirements. Besides the preferred stock there is 81,500 shares of common.

Assets Seven Times Liabilities

The company's balance sheet shows current assets to be about seven times the current liabilities. Sales during the year amounted to a little less than $24,000,000. Net earnings after depreciation and Federal taxes were $2,233,778.60. The consolidated balance sheet as of November 30, 1927, but adjusted to give effect to the new financing plan and the retirement of the existing preferred stock, was as follows:

ASSETS

CURRENT ASSETS		
Cash in banks and on hand	$2,259,469.78	
Notes and accounts receivable	3,642,419.30	
Inventories	3,760,505.15	$9,662,394.23
ADVANCES TO EMPLOYEES		
Secured by capital stock, etc.		172,727.12
MISC. INVESTMENTS, ETC.		
Less Reserves		596,124.79
CAPITAL ASSETS		
Land, buildings, etc...	2,093,636.87	
Less reserve for dep...	609,154.12	1,484,482.75
PATENTS		1.00
DEFERRED CHARGES		
Unexpired insurance	10,143.99	
Factory supplies	13,334.04	23,478.03
		$11,939,207.92

LIABILITIES

CURRENT LIABILITIES		
Accounts payable	945,726.01	
Accrued taxes	100,000.00	
Provision for Fed. tax	341,527.05	1,387,253.06
RESERVES FOR		
Compen. insurance....	71,255.88	
Contingencies	178,100.63	249,356.51
6% CUMULATIVE PREFERRED STOCK—SERIES "A" *Par value $100 per share*		
New issue		3,500,000.00
COMMON STOCK—*Par value $25 per share*		
Authorized—100,000 shares		
Outstanding—81,500 shares	2,037,500.00	
SURPLUS	4,765,098.35	6,802,598.35
		$11,939,207.92

Special Set of Firestone Tires Made for J. M. White at a Cost of $1,340 with Which He Hopes to Win the World's Speed Record at Daytona Beach, Feb. 15-23.

GOODYEAR COTTON MILLS OPERATING CONTINUOUSLY

A record for continuous operation has been set by the Goodyear Cotton Mills, Inc., Killingly, Conn., which has entered upon its sixth year. For the last five years the factory has operated with day and night shifts, all working at maximum hours permitted under the State statutes, which is 55 hours for day workers and 60 hours for night workers per week. The product of the mill has been exclusively tire fabrics, the company being a subsidiary of the Goodyear Tire & Rubber Company and the chief supplier of cotton goods to the parent company.

New Rubber Heel Company

The Balloon Rubber Heel Corporation, headed by B. G. Gray, vice-president of the Western Maryland Railroad, Baltimore, Md., has located its plant at Beverly, Mass., where it will immediately begin production. The new heel, which combines the principle of an air cushion with a non-skid heel surface, is claimed to be one of the lightest heels in the market. F. J. Gleason, wno has been connected with the rubber business in various capacities for 35 years, is vice-president and manager of the concern.

GOODYEAR APPLIES FOR FOUR RADIO STATIONS

Following the recent announcement of the Firestone Tire & Rubber Company, that direct radio communication would soon be attempted between the Akron home office and their plantation projects in Liberia, the Goodyear Tire & Rubber Company has now made application to the Federal Radio Commission for permission to establish four short wave stations to be located at Akron, O., Los Angeles, Cal., Wolverhampton, England, and Sydney, Australia, in order to create a system of intercommunication between the home office and its subsidiaries.

Hearings on the Goodyear application was held in Washington on January 24. The company was represented by C. A. Stillman, vice-president, John Grotzinger, electrical engineer, and Brandon Wentworth, radio engineer.

French Ochre Agent

V. G. Thomas & Company, 99 John Street, New York City, have been appointed as distributors in the United States and Canada of the French ochres manufactured by the Societe des Ocres du Midi, Apt., Vaucluse, France. This concern produces the "G. A. R. No. 1" brand which is claimed to be bright in color, strong, clear and chromy in tint and uniform.

Hankins Rubber Company

The Hankins Rubber Company, recently incorporated in Ohio for $100,000, has purchased the plant of the Trolley Supply Company at Massillon, Ohio, and will shortly begin the manufacture of surgeon's gloves and other rubber surgical sundries. The incorporators include S. B. Hankins, formerly vice-president of the Massillon Rubber Company.

The German firm of August Wagelin A.-G., of Kalscheuren, manufacturers of carbon black, is reported to have acquired the Russfabrik Kahl, of Kahl-am-Main.

CATALPO!

MURRAY RUBBER COMPANY BRINGS OUT NEW TIRE

The Murray Rubber Company, of Trenton, N. J., has introduced a new line of tires guaranteed for 24,000 miles of service. The new tires, in all sizes, have two more plies of fabric than in the ordinary standard tire of the same size. The last two plies have a heavy rubber cushion underneath them. The construction known as the "squegee" construction, is said to insure the flexibility and freedom from carcass trouble of the 4-ply and gives the strength and freedom from "shimmeying" of the 6-ply.

Murray salesmen have only had the new line in hand since the first of the year, but are reported to have already signed up many new distributors. Many new factory representatives are being added to the sales force, and the Murray Company officials look forward to an encouraging year.

COAST TIRE & RUBBER ELECT NEW OFFICERS

A completely new set of officers were elected at the recent special meeting of the Board of Directors of the Coast Tire and Rubber Company, Oakland, Cal. One change in the directorate was also made.

Louis S. Budo, who has held the position of vice-president and general manager for several years, was named president, succeeding J. C. Hughes, who is retiring from active business.

Egbert Laub was elected vice-president to succeed Mr. Budo. Mr. Laub has only recently completed a post graduate course at Leland Stanford University. He will also sit on the Board of Directors as the successor to Mr. Hughes. C. E. Armstrong, one of the oldest men in the organization, was appointed secretary, succeeding E. H. Russell, who retires.

The new officers announced that an intensive campaign to build up the company's business on the Pacific Coast will be launched during the current year.

Biggs Vulvanizing Equipment

The Biggs Boiler Works Company, Akron, Ohio, have recently distributed a new catalog on vulcanizers and devulcanizers, calling especial attention to their "patented Simplex boltless, quick-closing vulcanizer door" for horizontal and vertical vulcanizers. The door is opened and closed by revolving the head approximately eight inches, the head rotating on a central trunnion, and swings on extra heavy hinges. The head is supported against pressure by the lugs coming in contact with companion lugs on the door frame, these lugs automatically supporting the load, thus assuring safety, as each lug bears its proportionate share of the total load automatically, and eliminates the uncertainty of equal load distribution as experienced on head of the bolted type. This locking feature also eliminates the manuel operation heretofore employed on the bolted type door of tightening the door bolts.

The company is also distributing a new circular to the trade showing their lately developed jacketed hot water vulcanizer for use in connection with the Laursen process.

The Philadelphia Rubber Works Company, Philadelphia, Pa., have completed plans of the construction of an addition to their plant at Oaks, Pa. It is estimated that the new addition will cost $40,000, and work will be started at an early date.

Rubber Furniture

At the recent British rubber industry exposition various articles of furniture, manufactured entirely or in part of rubber, were exhibited. The range of articles included theatre seats, household floor mats and stair treads. A lounge room was also shown equipped with rubber-topped tables and chairs.

Economy Builds New Plant

The Economy Rubber Products Company, of Dayton, Ohio, has practically completed arrangements for the construction of a new plant building which will be ready for occupancy by the middle of the current year. In the meantime they have already disposed of a part of their old factory but will remain in possession until the new unit is completed.

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IT PAYS TO MICRONIZE

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Binney & Smith Co
41 E. 42nd Street-New York City

C. H. ROPER GOES TO ENDICOTT JOHNSON CO.

Charles H. Roper, for many years general factory superintendent at the Hood Rubber Company, has joined the Endicott Johnson Corporation at their rubber plant in Endicott, New York, where he will act in a similar capacity in their growing "jigger" department.

Mr. Roper is well schooled in rubber footwear, having been in charge of the manufacturing department and cost department at the Hood plant before he was advanced to footwear factory manager, and finally to general manager of all departments including tires and mechanicals.

Endicott Johnson has been making their own rubber heels and soles and tennis shoes for several years, and it is understood that they will branch out further into arctics, gaiters, boots and rubbers until they make a full line of footwear.

New Tire Plant in Chicago

The Karg Tire and Rubber Company has opened a plant at 6555 West 65th street, Chicago, Ill., for the manufacture of what is claimed to be a newly developed tire with a puncture-proof feature. The production schedule at the outset calls for 1,000 tires per day. The puncture-proof quality of the tire is said to habe been developed by the use of steel strips. The tire is known as the Gostling tire, taking the name of its inventor, Fred J. Gostling.

The Philadelphia Rubber Works Company

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CATALPO!

LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

FEBRUARY 4, 1928

COTTON

THE cotton market experienced a series of erratic fluctuations during the last fortnight and the quotation for spot middlings has receded to around 17 cents. Predictions for the new crop, however, have generally supported the belief that the acreage planted will exceed that of 1927. The trade in cotton has been dull with export sales especially light. Little improvement is expected in price levels under the existing conditions. Domestic mill stocks of cotton at the end of December amounted to 1,707,326 bales.

High, low and closing prices for spot middlings New York, on February 4 were as follows:

	High	Low	Feb. 4 Close	Jan. 19 Close
February	16.95	16.95	16.95	.....
March	17.17	16.92	16.97	18.82
May	17.35	17.10	17.14	18.91

Tire Fabrics

Prices of tire fabric have dropped approximately a cent all along the line during the last two weeks in line with the general decline in the cotton market. Trading has been extremely light with little buying interest evident. Most of the tire factories are sold up for immediate requirements and are now urging that March commitments be delivered during the present month. In spite of the decline in prices the market is steady. The Rubber Association of America reports that the consumption of tire fabric in the United States during 1927 totaled 148,793,259 pounds. Latest prices follow:

CORD				
Peeler, carded, 23/5/3	lb.	.42½	@	.43
Peeler, carded, 23/4/3	lb.	.43½	@	.44½
Peeler, carded, 13/3/3	lb.	.40	@	.41
Peeler, carded, 15/3/3	lb.	.41	@	.42
Egyptian, carded, 23/5/3	lb.	.53	@	.54
Egyptian, combed, 23/5/3	lb.	.57	@	.58
CHAFERS				
Carded American, 8 oz.	lb.	.37	@	.38
Carded American, 10 oz.	lb.	.40	@	.41
Carded American, 12 oz.	lb.	.39	@	.40
Carded American, 14 oz.	lb.	.37	@	.39
LENO BREAKER				
Carded American, 8¼ oz.	lb.	.40	@	.41
Carded American, 10¼ oz.	lb.	.40	@	.41
SQUARE WOVEN				
Carded American, 17¼ oz. 23-11 ply	lb.	.42	@	.43
Carded American, 17¼ oz. 10-5 ply	lb.	.37	@	.39

Sheetings

The market for sheetings has been fairly brisk during the last fortnight with a renewal of interest from factories and a slightly lower scale of prices. Latest quotations are reported as follows:

40-inch 2.50-yard	yd.	.12⅞	@	.13
40-inch 2.85-yard	yd.	.11	@	.11¼
40-inch 3.15-yard	yd.	.12	@	.12¼
40-inch 3.60-yard	yd.	.10	@	.10¼
40-inch 3.75-yard	yd.	.08¼	@	.08½
40-inch 4.25-yard	yd.	.07¼	@	.07⅝

Ducks

Small commitments in cotton ducks have been the rule in the trading over the last two weeks and quotations have generally remained nominal and unchanged. Mills report some reduction in inventories, however, on filling and enameling qualities. Late prices follow:

Belting and Hose	lb.	.35	@	.36
Enameling	lb.	.35½	@	.40
Shoe Ducks	lb.	.31	@	.35
Single filling	lb.	.15	@	.17½
Double filling	lb.	.18	@	.19

RECLAIMED RUBBER

Activity has continued in the reclaimed rubber market in spite of the decline in crude rubber prices. Production is also reported to be proceeding at capacity schedules. A general tone of optimism pervades the entire reclaimed rubber market and the trade looks for a still greater increase in reclaimed consumption during 1928 than was experienced in 1927. Prices remains firm and unchanged. Late quotations are as follows:

High Tensile				
Super-Reclaim No. 1 Black	lb.	.17¾	@	.18
Super-Reclaim No. 2 Black	lb.	.14	@	.14½
High Tensile Red	lb.	.16¼	@	.16½
Shoe				
Unwashed	lb.	.08	@	.08¼
Washed	lb.	.10	@	.10½
Tube				
No. 1 (Floating)	lb.	.18	@	.18½
No. 2 (Compounded)	lb.	.14¼	@	.14½
Tires				
Black, washed		.10	@	.10¼
Black, unwashed		.08¼	@	.08½
Black selected tires	lb.	.08¾	@	.09
Dark Gray	lb.	.12½	@	.13
Light Gray	lb.	.13¼	@	.13½
White	lb.	.15	@	.15½
Truck, Heavy Gravity	lb.	.07¾	@	.08
Truck, Light Gravity	lb.	.08¼	@	.08½
Miscellaneous				
Mechanical Blends	lb.	.07	@	.08
Red	lb.	.14½	@	.15

Scrap Rubber

Dealers are complaining of the difficulties of collecting which is a general seasonal condition during the winter months. The demand on the part of reclaimers still holds up in fair volume. Prices remain firm and practically unchanged. Latest quotations are as follows:

(Prices to Consumer)

Auto tire peelings	ton	38.00	@	40.00
Standard White auto	ton	65.00	@	67.50
Mixed auto	ton	27.50	@	28.50
Bicycle tires	ton	27.00	@	30.00
Clean solid truck tires	ton	28.00	@	30.00
Boots and shoes	lb.	.07⅜	@	.07⅞
Arctics, trimmed	lb.	.01⅝	@	.01½
Arctics, untrimmed	lb.	.01	@	.01¼
Inner tubes, No. 1	lb.	.09	@	.09¼
Inner tubes, No. 2, compounded		.06	@	.06¼
Inner tubes, Red	lb.	.08	@	.08¼
Air Brake Hose	ton	40.00	@	42.50
Rubber Hose	ton	18.00	@	20.00

CRUDE RUBBER

THE crude rubber market has been more active within the last fortnight than for many months. On the New York Rubber Exchange two record days were experienced on February 1 and 2, when more than 2,000 lots were sold during each trading session. The feature of the Exchange market was the amount of business done for foreign accounts. Under such pressure of heavy selling the market declined steadily but not sharply and shows a net loss of approximately 2½ cents throughout the list from the price levels of two weeks ago. There is ample rubber in hand for the requirements of the next few months and it is apparent that the manufacturing interests are not giving very serious consideration to distant positions. Stocks of rubber in London have shown another slight increase and January arrivals in the United States estimated at 44,700 tons are unusually heavy under the circumstances. The tone of the market is barely steady and still lower prices are being freely predicted by the trade.

Prices on the New York outside markets on Feb. 4 were as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot	.37¼	@	.37½
February	.37¼	@	.37½
March	.37¼	@	.37½
April-May	.37¾	@	.38
First Latex, crepe spot	.37⅝	@	.37⅝
Amber Crepe, No. 2	.35¾	@	.36
Amber Crepe, No. 3	.35	@	.35¼
Amber Crepe, No. 4	.34½	@	.34¾
Brown Crepe, Rolled	.30½	@	.30¾
Brown Crepe, Clean, thin	.35	@	.35¼
Brown Crepe, Specky	.34½	@	.34¾
Liquid Latex, per gal.	1.50	@	1.75
Paras—			
Up-river Fine	.28¼	@	.28½
Up-river Medium	.24¾	@	.25
Up-river Coarse	.22¾	@	.23¼
Acre Bolivian, fine	.28¾	@	.29¼
Caucho Ball, Upper	.23¾	@	.24¼
Islands, fine	.26½	@	.26¾
Centrals—			
Central, scrap	.22¾	@	.23
Esmeraldas,	.22¾	@	.23
Guayule, washed and dried	—	@	.30
Balata—			
Block, Colombia	.38	@	—
Block, Cuidad	.39	@	—

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot	.17⅞	@	.18d
February	.17⅞	@	.18d
March	.17⅞	@	.18d
April-June	.18¼	@	.18⅜d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	.17⅝	@	.17¾d

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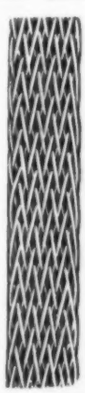

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LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

FEBRUARY 6, 1928

THE excellent condition of the rubber chemical market continues. Last month the volume movement of all lines of chemicals and compounding materials exceeded expectations and though February is not expected to continue at the same pace, it has started out strongly and the outlook is good for another big month. Production of tires, tubes and mechanical goods has increased steadily since the first of the year while reports from footwear centers indicate that the recent storm area which extended over the northern, eastern and many of the southern states created a demand for rubber overshoes and galoshes which depleted stocks rapidly. This condition has meant increased activity on the part of footwear factories with a consequent larger demand for compounding materials.

A new material, Oxynone, has just been announced. It is classed as both an accelerator and anti-oxidant and many advantages are claimed for it by the producer.

ACCELERATORS

Organic			
A-7	lb.	.70 @	.80
A-11	lb.	.75 @	.90
A-16	lb.	.65 @	.85
A-19	lb.	.75 @	.90
A-20	lb.	.60 @	.75
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16¼
Cryiene	lb.	.70 @	—
paste	lb.	.50 @	—
Di-Ortho-Tolyiguanidine	lb.	.80 @	.85
Diphenyiguanidine	lb.	.64 @	.68
Ethylidene aniline	lb.	.60 @	.65
Excellerex	lb.	.35 @	.40
Formaldehyde Aniline	lb.	.38 @	.42
Grasselerator 102	lb.	.62½@	.67½
Grasselerator 552	lb.	4.45 @	4.60
Grasselerator 808	lb.	1.05 @	1.35
Grasselerator 833	lb.	1.50 @	1.75
Heptene	lb.	.55 @	—
Hexamethylene-tetramine	lb.	.62½@	.67½
Lithex	lb.	.18 @	.20
Methylenedianilide	lb.	.38 @	.40
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.90
Para-Nitrosodimethylaniline, f.o.b. works	lb.	.92 @	.96
Piperidine-Piperidyldithio-Carbamate	lb.	4.45 @	4.60
R & H 40	lb.	.50 @	.55
R & H 50	lb.	.50 @	.55
Safex	lb.	1.20 @	1.25
Tensilac, No. 39	lb.	.55 @	.60
Tensilac, No. 41	lb.	.65 @	.70
Thermlo F	lb.	.50 @	.55
Thiocarbanilide, kegs	lb.	.23 @	.25
Thionex	lb.	3.25 @	—
Trimene	lb.	.75 @	—
base	lb.	1.20 @	1.35
Triphenyiguanidine	lb.	.65 @	.70
Vulcanex	lb.	.82 @	.86
Vulcone	lb.	.70 @	.74
Vulcanol	lb.	1.05 @	1.08
Z 88	lb.	.75 @	1.00
Inorganic			
Lead, sublimed blue	lb.	.08¼@	.08¾
Lead, white	lb.	.10½@	.12½
Litharge, domestic	lb.	.09 @	.09¼
Magnesia, calcined,			
light	lb.	.06 @	.12
heavy	lb.	.04 @	.04½

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.33 @	.35
Ultramarine	lb.	.08 @	.35
Browns			
Sienna, Italian	lb.	.05 @	.12½
Umber, Turkey	lb.	.04½@	.06
Greens			
Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.35 @	.38
Reds			
Antimony			
crimson, 15/17	lb.	.40 @	—
sulphur free	lb.	.50 @	.52
golden 15/17 F.S.	lb.	.16 @	.25
Indian English (dom.)	lb.	.08 @	.10
Oximony	lb.	.13¼@	—
Para toner	lb.	.13 @	.14
Red oxide, reduced	lb.	.10 @	.11
pure	lb.	.14 @	.15
Venetian red	lb.	.02 @	.06
Vermillion, quicksilver, English	lb.	1.85 @	1.95
Whites			
Lithophone, Akcolith	lb.	.05 3/5@	.06
Lithophone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanox	lb.	.10 @	.10½
Cal. Base Pigment	lb.	.10 @	.10½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.07⅛
Zinc Oxide—French Process			
White seal	lb.	.11⅞@	—
Green seal	lb.	.10⅞@	—
Red Seal		.09⅞@	—
Yellows			
Chrome	lb.	.17 @	.20
Ocher, French medium	lb.	.03½@	.06
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate	lb.	.10½@	.12
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.02¼@	.04
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Blacks			
Arrow "Aerfloted"	lb.	.08 @	.12
Bone Black	lb.	.05½@	.11
Carbon, compressed	lb.	.07½@	.11½
Carbon, uncompressed	lb.	.07 @	.11
Drop Black	lb.	.06 @	.10
Lamp Black	lb.	.12 @	.40
Micronex	lb.	.08 @	.12
Velvetex carbon	lb.	.04 @	.07
Blanc fixe dry f.o.b. works	lb.	.04 @	—
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	ton	12.00 @	14.00
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	9.00 @	20.00
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.20 @	.24
medium white	lb.	.20 @	.24
common bone	lb.	.14 @	.15
Magnesia, carbonate	lb.	.08½@	.11
Mica, powdered	ton	90.00 @	100.00
Rotten Stone (powdered)	lb.	.02½@	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	12.00 @	15.00
Velvetex	lb.	.04 @	.07
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Superfine	ton	10.00 @	12.00
Witco	ton	12.00 @	—
Wood pulp XXX	ton	45.00 @	—
Wood pulp X	ton	25.00 @	—
Zinc Carbonate	lb.	.10 @	.12

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Montezuma, solid	ton	28.00 @	36.00
Montezuma, granulated	ton	32.00 @	42.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	42.00 @	45.00
Pioneer-granulated	ton	52.00 @	55.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.31½@	—
Acids, Fatty			
Stearex	lb.	.10 @	.14
Stearic, single pressed	lb.	.10 @	.11
Double pressed	lb.	.11½@	.12
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.42½@	1.45
Oils			
Castor, No. 3 bbls.	lb.	.13½@	.14
Corn, crude, bbls.	lb.	.09¼@	.11
refined	lb.	.11 @	.11½
Cottonseed, crude		.08½@	.08⅝
Cycline	gal.	.27 @	.34
Degras	lb.	.04¼@	.04½
Fluxrite	lb.	.05 @	.06
Glycerine, C.P. drums	lb.	.26 @	.26½
Linseed, Raw C.L. bbl.	lb.	.09½@	.10
Palm Lagos	lb.	.07¼@	.07½
Niger	lb.	.07¾@	.08
Vansulol	lb.	.10½@	—
Para-Flux	gal.	.17 @	—
Peanut, domestic, crude	lb.	.12 @	.12¼
Petrolatum, white	lb.	.08⅞@	.09
amber	lb.	.03¾@	.04
dark amber	lb.	.03⅜@	.03½
Pine, steam distilled	lb.	.67 @	.69
Rapseed, refined	gal.	.80 @	.82
Rosin, first rectified	gal.	.55 @	—
second rectified	gal.	.58 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	9.00 @	10.00
Rosin, grade K, 280 lb.	bbl.	9.90 @	—
Pigmentar	gal.	.33 @	.41
Tar Retort, 50 gal.	bbl.	13.00 @	14.00
Solvents			
Acetone, pure	lb.	.14½@	—
Alcohol denatured,			
No. 1 bbls.	gal.	.37½@	.44½
Benzol, 90%	gal.	.28 @	—
pure		.29 @	—
Carbon bisulphide	lb.	.05½@	.06¼
Carbon tetrachloride		.06¾@	.07½
Motor gasoline,			
steel bbls.	gal.	.17 @	—
Naptha, V. M. & P.	gal.	.14 @	—
Turpentine, spirits	gal.	.57½@	.58½
wood	gal.	.43 @	—
Waxes			
Beeswax	lb.	.56 @	.58
Carnauba	lb.	.40 @	.50
Ceresin, white	lb.	.13 @	.14
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.30 @	—
green	lb.	.26 @	.30
Miscellaneous			
RSL Mold Solution	gal.	.75 @	1.00

ANTI-OXIDANTS

Antox	lb.	.79 @	.83
Neozone	lb.	.74 @	—
Oxynone	lb.	.68 @	.70
Resistox	lb.	.55 @	.70
Stabilite	lb.	.65 @	—
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03½@	.06
Sulphur flour,			
Superfine bags	cwt.	2.20 @	2.80
Superfine, bbls.	cwt.	2.55 @	3.10
100% pure, refined,			
bags	cwt.	2.60 @	3.15
bbls.	cwt.	2.95 @	3.50

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

THE gross imports of crude rubber during 1927, as announced by the Department of Commerce, totaled 425,142 long tons which compared very closely with the figure of 432,316 tons as reported by the Rubber Association of America. With re-exports of 27,775 tons during the year, the net imports are brought down to 403,472 tons, which, as predicted, exceed the 1926 importations by only the narrow margin of approximately 8,000 tons. Consumption figures for January have not been issued but are expected to show a greatly increased tonnage over the extremely low December figure and by all indications the February consumption will be even greater.

Crude rubber has suffered a decline in the market of approximately 4 cents in all plantation grades since the first of the year and there is ample evidence, in considering the present statistical position of crude rubber, to support the belief that price levels will decline still further before there is any improvement. London stocks still remain high around a weekly average of 66,000 tons and stocks within the United States and afloat are ample for the requirements of the manufacturers for several months.

London and Penang markets have also responded to the weakness in New York. No change was made by the British Colonial Office in the exportable quota under the restriction policy and the minimum allowance of 60 per cent will continue for the next quarter. The average price for spot on the London market for the first quarter of the present restriction year was 19.023 pence.

Latest figures covering imports and exports of rubber in the leading producing and consuming markets are included in the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	425,142	338,998,697	35.59	27,775	24,735,488	39.77	403,472
1925:							
Jan.	32,898	22,406,756	30.41	1,162	963,593	37.02	31,736
Feb.	24,696	18,532,115	33.50	979	779,406	35.53	23,717
Mar.	33,072	25,146,691	33.94	1,345	1,105,119	36.69	31,727
Apr.	32,506	24,874,562	34.16	1,130	1,009,305	39.86	31,376
May	36,932	30,311,754	36.64	1,203	1,323,445	49.12	35,729
June	31,569	26,855,883	37.98	1,198	1,577,106	58.75	30,371
July	32,455	33,701,723	46.36	1,278	2,132,681	74.52	31,177
Aug.	33,412	39,834,348	53.22	1,181	1,623,258	64.08	32,281
Sept.	26,367	36,686,013	62.11	1,154	1,820,360	70.41	25,213
Oct	34,651	50,027,338	64.45	1,132	1,989,291	78.43	33,519
Nov.	37,755	56,271,963	66.54	1,605	2,898,930	80.65	36,150
Dec.	40,329	65,055,868	72.02	1,510	2,625,259	77.61	38,819
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.28	40,320
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.02	1,437	1,519,870	47.20	35,675
Oct.	29,333	25,300,483	38.50	1,366	1,316,270	43.02	27,967
Nov.	38,925	34,661,631	39.97	1,482	1,320,461	42.00	37,443
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.99	1,526	1,444,734	42.22	41,814
Feb.	28,338	23,110,257	36.41	2,451	2,277,297	41.47	25,887
Mar.	35,514	28,693,026	36.07	2,763	3,249,665	52.50	32,751
Apr.	46,202	37,284,806	36.15	1,575	1,428,425	40.45	44,627
May	36,543	30,998,657	37.87	2,782	2,501,562	41.74	33,761
June	33,045	27,833,770	36.28	1,775	1,550,592	38.99	31,270
July	37,678	31,678,259	37.53	1,958	1,560,853	35.58	35,720
Aug.	32,810	26,396,904	36.59	1,809	1,382,768	34.49	31,001
Sept.	33,301	23,852,857	35.73	3,500	3,036,929	34.91	29,801
Oct.	30,184	22,163,044	32.77	2,513	2,042,713	36.29	27,671
Nov.	38,113	27,039,129	31.67	2,468	2,014,196	36.43	36,123
Dec.	30,696	22,183,601	32.26	2,654	2,245,754	37.77	28,042

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

	Figures on Monthly Basis						
	1921	1922	1923	1924	1925	1926	1927
January	5,045	16,938	30,106	29,058	29,638	32,196	31,518
February	5,955	14,767	30,149	25,736	29,761	31,136	30,137
March	9,190	21,408	36,629	28,385	33,498	32,936	36,141
April	13,084	19,294	29,085	27,129	34,139	32,696	35,871
May	16,023	23,246	36,155	25,845	35,322	29,364	34,592
June	16,142	31,713	24,272	22,753	35,822	28,598	33,801
July	18,310	24,522	17,685	23,396	36,053	27,577	29,219
August	23,649	29,361	20,359	28,982	35,909	34,533	33,460
September	16,705	24,410	17,594	31,497	31,691	32,904	27,214
October	16,814	26,881	21,321	31,520	29,047	29,836	26,790
November	14,105	24,950	20,437	27,289	28,853	28,080	26,792
December	15,482	25,070	21,902	27,199	28,748	26,293	25,492
Totals	170,504	282,560	305,694	328,769	388,481	366,149	371,027

	Figures on Quarterly Basis					
Quarter	1921	1922	1923	1924	1925	1926	1927
Jan./Mar.			96,776	87,609	95,263	94,301	99,216
Apr./June	65,463	127,860	89,493	75,674	104,099	87,109	103,242
July/Sept.			55,621	83,813	99,493	93,793	89,893
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	
Totals	171,425	282,427	305,507	339,752	384,644	358,415	

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
November 26	4,014	779	1,588	1,945	8,326
December 3	6,348	847	1,641	943	9,779
December 10	5,014	709	2,890	635	9,248
December 17	5,395	565	1,801	1,789	9,550
December 24	5,483	1,030	1,487	1,229	9,229
December 31	4,810	719	1,988	268	7,785
January 7	4,569	357	1,828	158	6,912
January 14	4,546	475	1,200	302	6,523
January 21	4,654	1,290	2,518	608	9,070
January 28	4,469	420	975	212	6,076

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1925																																
July	81¼	81⅞	85⅝	—	—	85⅛	90½	95⅛	94⅞	99⅞	106½	—	88¼	105⅝	119⅝	116⅜	115⅞	80¼	83½	82⅞	117⅛	119	117⅝	112⅝	112⅞	—	107⅜	96⅝	93¾	89¾	93⅝	103⅜
August	94⅛	—	95⅞	88⅞	86⅝	86⅝	81⅞	79	—	71¾	72⅞	76½	81¾	80⅝	77⅝	78⅛	82	84⅛	—	94⅜	82⅞	92	93¼	93½	89	85¾	85⅞	87⅛	87⅛	90	90	83
September	85¾	87¼	85	81⅛	85¾	81¼	—	78¾	80½	83	86⅞	92	—	95⅛	98⅜	98⅝	93⅜	94¾	—	101⅛	102	99	99¼	99¾	98	98	99⅞	99⅝	101½	99¼	100¼	98
October	91¼	91¾	92	94½	97	97½	99	99¼	101	99⅛	99½	100¾	101⅜	105½	97	109	107	109⅝	110¾	110½	90¼	88¾	88⅝	89	—	106¼	106⅝	108⅝	91	107	91¼	98½
November	—	99¼	98¾	98¼	100	100¾	—	98¼	99½	100¾	101⅜	104½	105½	99¼	101	93	88⅜	86⅝	—	88¾	88⅝	—	—	—	—	—	—	—	93	91¼	91¼	79⅝
December	106¾	108½	107¾	107¾	108¼	—	108	109	109¼	106	106⅞	105½	—	101	99¼	90¼	93	88⅜	86⅝	—	88⅝	88⅝	88⅝	88⅝	88⅝	88⅝	88⅝	91	69¾	70½	69	62¾
1926																																
January	—	67	67¼	—	66¾	66¾	53½	58	56	55½	61	56	53	49½	48¾	49½	42	43	41¾	43½	41½	42	42½	41½	41½	41½	41½	41½	41½	41½	41½	42½
February	67	58	58	59	53	59	49¾	49¾	49½	49¾	42	41¾	38¾	41¾	43½	42	41¾	41¾	41¾	42½	42½	42	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
March	55	59	59	50	50¾	42	41½	41½	41½	41½	41½	38¾	37¾	40¾	42½	41¾	37½	40¾	40¾	42½	42½	42	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
April	48½	—	—	42	41½	41½	41½	41½	41½	41½	43½	41¾	37½	43¾	43½	42	40	38	40	41½	42	42	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
May	41½	42	42	41½	42	41½	41½	41½	41½	41½	43½	41½	37½	42	43½	42	40	38	40	41½	42	42	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
June	42	42	42	41½	42	41½	41½	41½	41½	41½	43½	41½	37½	42	43½	42	40	38	40	41½	42	42	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
July	42	42	42	41½	42	41½	41½	41½	41½	41½	43½	41½	37½	42	43½	42	40	38	40	41½	42	42	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
August	42	38¾	38½	40¼	40¼	40¼	40¼	40¼	40¼	40¼	42½	42½	40¾	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
September	40¼	40¼	40¼	—	—	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
October	43	41	41¼	43¼	43¼	42½	42½	41½	41½	41½	42½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½
November	41¼	37½	37½	41½	41½	41½	41½	41½	41½	41½	42½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½
December	36¾	37½	37½	37½	—	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½
1927																																
January	—	38¼	39	39	39¼	39¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
February	—	37⅞	37½	41	41	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼
March	—	37⅞	40	41	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼
April	—	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼
May	—	40¾	40¾	40½	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼
June	—	40¾	40¾	—	—	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼
July	85½	85¼	85¼	—	85¾	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½
August	85	83¾	83¾	—	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾
Sept.	34	33¾	33¾	—	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾
Oct.	33¾	—	33¾	—	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾
Nov.	35	35¼	35½	—	35¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾
Dec.	—	40½	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
1928																																
January	—	—	—	—	—	—	41¾	41¼	41	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
February	—	37½	37¾	—	—	—	37¾	37¾	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
March	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
April	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	
May	15.25	27.39	18.89	58.47	47.75	40.76	
June	15.11	26.88	18.81	77.26	42.50	37.25	
July	14.67	26.10	22.16	103.16	41.03	34.44	
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Sixth Restriction Year—First Quarter

Day	Nov.	Dec.	Jan.	Day	Nov.	Dec.	Jan.
1	16⅞	19⅝	—	17	17¾	19½	19¼
2	16⅞	19½	—	18	18⅛	—	19¼
3	17	19½	19⅞	19	18¼	19⅝	19¼
4	17¼	—	19⅞	20	—	19⅞	19¼
5	17½	19¾	19⅞	21	18½	19⅞	19¼
6	—	19⅞	19¾	22	18½	19⅞	—
7	17½	19¾	19¾	23	18⅞	20	19¼
8	17½	19⅝	—	24	19⅛	—	19⅛
9	17¾	19⅝	19⅝	25	19½	—	19⅛
10	17⅝	19¾	19⅝	26	19⅞	—	19⅛
11	17½	—	19⅝	27	—	—	19⅛
12	17½	19½	19⅜	28	20	19⅞	18⅞
13	—	19½	19½	29	19⅞	20	—
14	17⅝	19⅜	19⅜	30	19½	20	18¾
15	17⅜	19½	—	31	—	—	18⅞
16	17⅞	19½	19⅜				

(The average price for the period for which daily prices are reported above is approximately 19.023 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27
November-January	14.285	14.175	17.9983	46.709	19.265
February-April	16.858	12.917	19.356	28.103	19.696
May-July	**14.242**	**10.947**	**38.469**	21.001	18.165
August-October	14.944	14.632	43.269	20.199	16.620

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Dec. Cents	Jan. Cents	Day of Month	Dec. Cents	Jan. Cents	Day of Month	Dec. Cents	Jan. Cents
1	19.65	——	11	——	19.50	21	19.55	19.05
2	19.85	——	12	18.70	19.70	22	19.50	——
3	19.95	19.55	13	18.60	19.45	23	19.75	18.85
4	——	19.75	14	19.00	19.35	24	——	18.65
5	19.65	19.60	15	19.25	——	25	——	18.55
6	19.80	19.85	16	19.40	19.15	26	——	18.80
7	19.65	19.65	17	19.45	19.10	27	20.15	18.40
8	19.15	——	18	——	19.25	28	20.00	17.95
9	19.35	19.50	19	19.75	19.30	29	20.20	——
10	19.25	19.55	20	19.70	19.25	30	20.10	18.05
						31	20.10	18.15

Average Monthly Price Per Pound

Month	1926 Cents	1927 Cents	1928 Cents
Jan.	20.85	13.42	19.12
Feb.	20.60	14.10	——
Mar.	19.35	14.32	——
Apr.	19.13	14.75	——
May	18.92	16.07	——
June	18.57	16.85	——
July	18.71	18.00	——
Aug.	18.57	20.04	——
Sept.	17.02	21.95	——
Oct.	13.14	20.55	——
Nov.	12.86	20.22	——
Dec.	12.68	19.58	——
Average for Year	17.53	17.49	——

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	60,870	55,198	76,172	36,759	46,296	45,312	97,629	100,434	121,484
Feb.	54,109	58,035	91,186	41,475	46,935	42,166	95,584	104,970	133,352
March	52,494	61,822	85,740	40,577	43,567	49,600	93,071	105,389	135,340
April	50,143	55,261	92,757	53,465	41,905	38,963	103,608	97,166	131,720
May	52,064	64,360	94,563	46,846	40,303	44,181	98,910	104,663	138,744
June	50,997	60,460	89,250	51,202	40,907	47,233	102,199	101,367	136,483
July	46,245	64,900	98,469	46,003	38,062	40,587	92,248	102,962	139,056
Aug.	42,354	60,870	96,148	41,254	37,360	40,937	83,608	98,230	137,085
Sept.	36,367	62,078	97,829	55,151	42,464	37,966	91,518	105,542	135,795
Oct.	34,085	64,089	97,452	51,098	52,930	42,804	85,183	117,919	140,256
Nov.	34,885	69,385	101,034	42,692	47,311	37,076	86,577	116,696	138,110
Dec.	51,215	72,520	100,130	48,208	52,020	47,938	99,423	124,540	148,068

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1920	1921	1922	1923	1924	1925	1926	1927
Jan.	19,300	56,573	67,252	73,498	57,460	27,172	9,994	54,994
Feb.	18,329	59,439	67,623	70,483	56,732	23,425	10,004	58,826
Mar.	18,969	63,913	66,670	63,438	55,647	18,104	13,127	63,055
Apr.	20,072	68,759	68,637	58,770	54,559	12,949	18,773	66,897
May	20,921	70,403	70,146	54,439	51,615	5,895	20,384	67,169
June	22,517	69,408	71,597	51,050	51,115	5,318	23,984	63,902
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727	63,717
Aug.	30,674	73,211	72,112	58,427	49,700	4,619	30,165	64,491
Sept.	35,504	72,175	70,977	54,523	44,011	5,453	35,077	68,236
Oct.	41,743	69,229	68,536	58,891	37,523	5,086	42,138	69,569
Nov.	45,550	70,786	68,548	60,074	33,593	3,869	44,057	67,050
Dec.	50,652	69,792	72,299	60,246	29,488	5,697	48,918	.....

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1927					
July	63,917	64,163	63,511	62,819	63,626
August	64,177	64,557	64,842	64,259	.....
September	65,162	66,148	66,664	67,253	.....
October	68,519	70,167	70,916	70,060	69,551
November	69,660	69,501	69,850	67,318	.....
December	65,869	66,011	64,761	63,397	63,207
1928					
January	64,360	65,524	65,450	66,285	.....
February	65,909	.....	.....	.....	.....
March	.....	.....	.....	.....	.....
April	.....	.....	.....	.....	.....
May	.....	.....	.....	.....	.....
June	.....	.....	.....	.....	.....

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1925	1926	1927	End of	1925	1926	1927
Jan.	15,925	16,726	25,440	July	15,894	23,101	22,558
Feb.	17,320	13,653	26,766	Aug.	17,251	23,362	25,764
Mar.	17,261	18,389	27,844	Sept.	16,526	25,997	25,178
Apr.	15,368	16,328	24,543	Oct.	15,346	26,614	25,790
May	15,804	16,967	25,133	Nov.	19,788	25,486	28,369
June	15,884	19,416	21,898	Dec.	18,840	26,443	25,798

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1925	26,001,664	66.8
1924	21,863,311	19.7	1926	24,199,524	78.8
1927			1927		
January	1,489,078	77.0	July	1,679,587	84.4
February	1,753,224	84.4	August	1,825,905	80.2
March	2,071,989	85.1	September	1,727,122	77.7
April	2,060,868	88.0	October	1,354,924	81.4
May	2,169,208	86.9	November	838,591	67.8
June	1,871,538	77.0	December	1,134,421	80.0

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927
January	11,918,000	14,386,000	17,582,000	17,888,000
February	9,626,000	13,210,000	15,814,000	18,240,000
March	10,961,000	14,890,000	19,302,000	22,464,000
April	14,583,000	19,013,000	20,848,000	23,371,000
May	15,889,000	20,459,000	24,213,000	26,579,000
June	16,421,000	20,724,000	23,803,000	27,799,000
July	18,610,000	22,879,000	24,752,000	29,784,000
August	19,825,000	22,323,000	26,912,000	29,779,000
September	16,871,000	20,177,000	22,929,000	28,409,000
October	18,029,000	19,826,000	23,973,000	25,497,000
November	16,607,000	18,024,000	20,618,000	24,400,000
December	15,663,000	17,954,000	21,419,000	23,718,000
TOTAL	185,003,000	223,865,000	262,165,000	297,928,000

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	40,932	45,259	51,633	60,845	61,237
Shipments	39,987	45,204	50,120	59,262	59,002
Inventory[2]	6,132	5,772	7,427	8,142	10,456

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	4,740	4,587	4,965	4,013	2,974	4,932	7,949	9,947	10,432
Feb.	4,908	4,865	5,095	3,924	3,436	4,458	8,928	11,164	11,075
Mar.	5,276	5,456	6,276	4,657	4,561	5,701	9,510	12,004	11,583
Apr.	5,341	5,346	6,299	5,498	4,980	5,701	9,088	12,461	12,122
May	5,467	5,023	6,151	5,954	5,211	5,657	8,611	12,343	12,462
June	5,418	5,422	6,202	6,737	5,724	6,253	7,243	11,968	12,462
July	5,587	4,950	5,087	6,298	6,337	5,973	6,421	10,592	11,326
Aug.	5,607	5,872	5,752	4,760	6,744	6,393	7,261	9,732	10,721
Sept.	5,007	5,706	4,822	4,569	6,040	5,717	7,681	9,318	9,722
Oct.	4,505	5,103	4,777	5,580	4,544	4,799	6,670	9,917	9,667
Nov.	4,229	4,324	4,220	3,671	3,733	4,036	6,955	10,297	9,502
Dec.	4,760	4,683		3,601	4,718		8,142	10,456	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	50,850	60,116	70,706	82,614	76,618
Shipments	49,673	59,072	68,016	81,004	71,591
Inventory[2]	7,643	8,425	11,052	11,313	16,200

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	6,343	6,809	5,337	5,576	3,723	6,016	11,570	14,361	15,585
Feb.	6,339	6,825	5,658	4,971	3,736	5,120	13,023	17,090	16,075
Mar.	7,000	7,030	7,184	5,711	4,987	6,157	14,236	19,131	17,096
Apr.	6,851	6,554	7,373	6,704	5,051	6,359	13,618	20,674	17,801
May	6,846	6,149	6,737	8,040	6,304	6,140	12,501	21,141	18,389
June	6,942	6,171	6,306	9,032	6,898	6,832	10,409	20,243	17,858
July	7,544	5,729	5,284	9,140	8,569	7,070	8,635	17,267	16,004
Aug.	7,618	7,424	6,480	6,923	9,579	7,983	9,271	15,462	14,664
Sept.	7,254	7,590	5,651	6,665	7,762	6,758	9,950	15,312	13,511
Oct.	6,612	6,208	5,065	7,845	5,474	5,024	8,726	15,929	13,539
Nov.	6,266	4,852	4,471	5,406	4,045	4,427	9,941	16,604	12,736
Dec.	6,999	5,277		4,991	5,463		11,313	16,200	

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	Passenger Cars			Trucks		
	Total	United States	Canada	Total	United States	Canada
1920	1,883,158	1,799,522	83,636	322,039	311,531	10,508
1921	1,514,000	1,452,902	61,098	147,550	142,402	5,148
1922	2,397,827	2,302,923	94,904	251,434	244,285	7,149
1923	3,719,164	3,589,936	129,228	378,288	361,078	17,210
1924	3,262,764	3,144,999	117,765	378,106	360,625	17,481
1925	3,817,639	3,678,328	139,311	498,019	475,941	22,078
1926						
January	284,703	272,922	11,781	33,461	29,763	3,698
February	334,524	319,763	14,761	41,685	37,608	4,077
March	399,105	381,116	17,989	49,233	44,848	4,385
April	401,836	383,907	17,929	53,887	50,314	3,573
May	394,569	373,140	21,429	51,343	47,838	3,505
June	358,360	339,542	18,818	47,048	44,110	2,938
July	328,816	315,863	12,953	41,847	39,592	2,255
August	393,040	380,258	12,782	47,907	45,404	2,503
September	363,537	350,913	12,624	51,299	46,428	4,871
October	300,142	289,547	10,595	46,965	42,890	4,075
November	226,278	219,504	6,774	39,410	36,356	3,054
December	143,413	137,361	6,052	30,002	28,302	1,700
TOTAL	3,928,323	3,766,336	161,487	534,082	493,453	40,629
January	208,718	196,973	11,745	40,874	37,243	3,631
February	275,458	260,632	14,826	41,947	38,118	3,829
March	360,754	341,665	19,089	48,590	45,056	3,534
April	373,961	353,071	20,890	48,216	44,495	3,721
May	374,259	352,268	21,991	47,890	44,173	3,717
June	290,188	273,718	16,470	43,003	40,265	2,738
July	242,144	233,425	8,719	32,249	29,981	2,268
August	281,464	271,325	10,139	34,552	31,715	2,837
September	233,694	225,013	8,681	35,145	32,564	2,581
October	191,942	185,706	6,236	37,141	35,586	1,555
November	114,076	108,903	5,173	25,743	24,299	1,444
December	145,902	139,850	6,052	29,772	28,072	1,700
TOTAL	3,073,236	3,808,753	164,483	500,869	461,960	38,909

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA[1]								DUTCH EAST INDIES[2]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[3]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[5]	Amazon Valley[6]	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926:															
Jan.	30,452	10,237	20,215	4,246	1,273	416	472	289	4,110	6,239	8,165	866	1,284	1,805	49,380
Feb.	30,440	8,306	22,134	5,120	725	488	450	253	4,524	5,717	6,854	554	2,759	1,978	51,556
Mar.	35,012	14,800	20,212	5,177	1,113	792	561	418	4,527	5,566	11,984	573	2,126	1,899	54,948
Apr.	23,727	10,565	13,162	3,766	590	679	374	293	4,226	4,598	6,285	410	2,318	1,529	38,230
May	31,231	10,604	20,627	3,944	691	927	410	279	4,440	5,358	8,737	502	1,353	1,464	48,732
June	30,624	11,764	18,860	4,208	452	779	512	275	4,444	6,125	10,614	549	1,213	1,279	49,310
July	28,824	15,280	13,544	4,422	938	911	498	439	4,618	5,612	13,112	1,521	1,565	1,148	48,328
Aug.	34,625	13,595	21,030	5,666	521	890	476	316	4,132	5,699	10,390	378	1,888	1,097	52,483
Sept.	35,913	13,972	21,941	6,015	651	888	689	457	4,065	6,568	11,391	681	2,156	822	56,324
Oct.	39,367	15,203	24,164	5,672	634	805	473	385	4,058	6,998	11,491	661	1,904	1,023	58,268
Nov.	34,302	12,201	22,101	4,228	1,110	685	547	285	3,988	5,816	9,422	718	1,911	1,259	52,070
Dec.	36,811	14,716	22,095	6,498	1,176	895	617	338	5,054	7,117	12,786	790	3,821	714	61,901
	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	585	304	4,184	6,705	10,541	941	2,885	981	55,654
Feb.	27,528	11,607	15,921	3,571	1,469	552	445	360	4,707	6,526	10,634	675	2,082	1,098	48,040
Mar.	41,346	17,464	23,882	7,142	1,124	997	639	432	5,657	7,003	12,490	733	3,203	1,791	65,093
Apr.	29,041	13,069	15,972	3,349	723	984	452	526	4,666	5,530	10,035	557	2,374	1,495	46,663
May	31,393	15,491	15,902	3,124	760	786	415	348	5,430	5,528	14,099	586	2,431	1,207	50,616
June	32,607	14,706	17,901	3,348	856	1,100	539	409	4,818	5,519	9,402	772	1,030	1,706	47,400
July	23,947	12,697	11,250	4,018	827	859	500*	333	4,771	6,140	11,663	519	1,713	1,115	*43,708
Aug.	30,371	17,105	13,266	5,357	688	1,133	500*	546	4,855	6,683	12,054	716	2,004	969	*48,271
Sept.	29,835	12,095	17,740	4,911	479	645	500*	498	3,635	6,052	10,059	497	2,474	1,213	*48,703
Oct.	29,846	15,801	14,045	5,245	802	721	500*	542	3,810	7,755	13,633	775	2,704	1,155*	*51,597
Nov.	28,277	19,860	8,417	4,464	1,277	1,241	500*	600	4,127	6,587	14,393	683	2,547	1,196*	*46,032
Dec.	32,185	17,865	14,320									1,191	3,321		

(1) Mayalan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Italy, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States[a]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (ac)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	-3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,643
1926:															
January	40,345	6,886	2,832	703	2,188	892	760	332	438	76	163	303	89	134	56,141
February	31,435	3,114	3,063	1,113	1,865	741	1,041	643	512	143	88	397	145	75	44,375
March	40,316	8,907	3,941	1,342	2,079	864	1,037	832	547	129	227	377	109	161	60,868
April	33,416	5,275	4,121	1,781	1,615	1,868	865	402	505	71	93	335	130	193	53,670
May	28,705	6,773	2,519	1,848	1,239	1,010	705	200	468	186	241	225	60	192	44,371
June	23,795	5,894	2,196	1,655	1,188	1,465	1,070	983	636	269	215	303	123	103	39,9[illegible]
July	34,266	6,768	2,352	2,202	1,552	1,447	800	132	702	295	480	292	121	115	51,5[illegible]
August	26,081	7,327	2,457	2,110	1,888	1,284	796	655	1,275	303	594	336	90	151	45,347
September	35,675	8,843	1,774	2,029	1,855	1,922	819	472	1,241	283	429	317	91	138	55,388
October	28,110	8,082	3,376	2,423	1,865	2,396	645	585	1,004	301	2	360	100	121	49,370
November	37,673	9,247	2,719	3,007	1,548	3,380	832	568	916	194	-18	358	90	181	60,695
December	35,850	4,749	2,890	2,562	1,847	856	439	725	777	248	156	443	151	306	51,999
1927:															
January	41,815	10,192	3,284	2,481	1,936	1,227	672	803	929	296	181	316	139	100	64,371
February	25,886	7,692	3,263	3,103	2,620	1,902	601	907	460	502	153	336	146	210	47,781
March	32,752	9,049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,026
April	44,627	7,875	2,310	2,393	1,509	2,181	781	1,972	762	448	58	230	177	218	65,541
May	33,761	2,896	2,006	3,380	2,519	1,084	918	887	694	633	-57	335	155	223	49,434
June	31,270	2,282	2,387	3,632	2,086	798	942	1,506	557	575	-16	243	164	183	46,609
July	35,720	1,116	2,384	2,946	2,104	1,505	1,007	415	900	436	66	227	177	236	49,239
August	31,001	3,463	2,795	3,119	2,013	1,970	684	518	772	552	-32	451	155	272	48,598
September	28,704	7,800	1,956	2,891	1,850	2,025	1,021	1,075	908	465	156	401	153	363	50,361
October	27,671	5,888	4,302	4,202	1,790	1,966		1,312	836		298				
November	36,123	1,687	2,837	4,209	1,916										
December															

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—United Kingdom exports to Russia, and beginning with October, 1927, exports from the United States to Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation: such imports amounted to 4,305 tons in 1926 and averaged about 400 tons monthly during the first ten months of 1927.

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for Mechanical Goods and Molded Articles

Du Pont Thionex imparts exceptionally good abrasion resistance and aging properties to its compounds, particularly to compounds containing a high percentage of reclaimed rubber. Spring bumpers are more resilient when cured with Thionex at low steam temperatures. Sole stocks have greater toughness and higher elongation, without sacrifice of stiffness. Steam hose deteriorates less rapidly.

Among the products in which du Pont Thionex is being used are:

Heels	White Bulbs
Soles	Spring Bumpers
Matting	Door Checks
Tiling	Boots and Shoes
Horseshoe Pads	Hot Water Bottles

Air, Steam and Water Hose

The greatest benefits are usually obtained when short cures at low temperatures are used, although Thionex is used in many products that are cured at steam pressures as high as 65 pounds per square inch. Quick curing Thionex stocks are being mixed and tubed or calendered without the slightest scorching difficulty, due to the delayed action of Thionex.

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